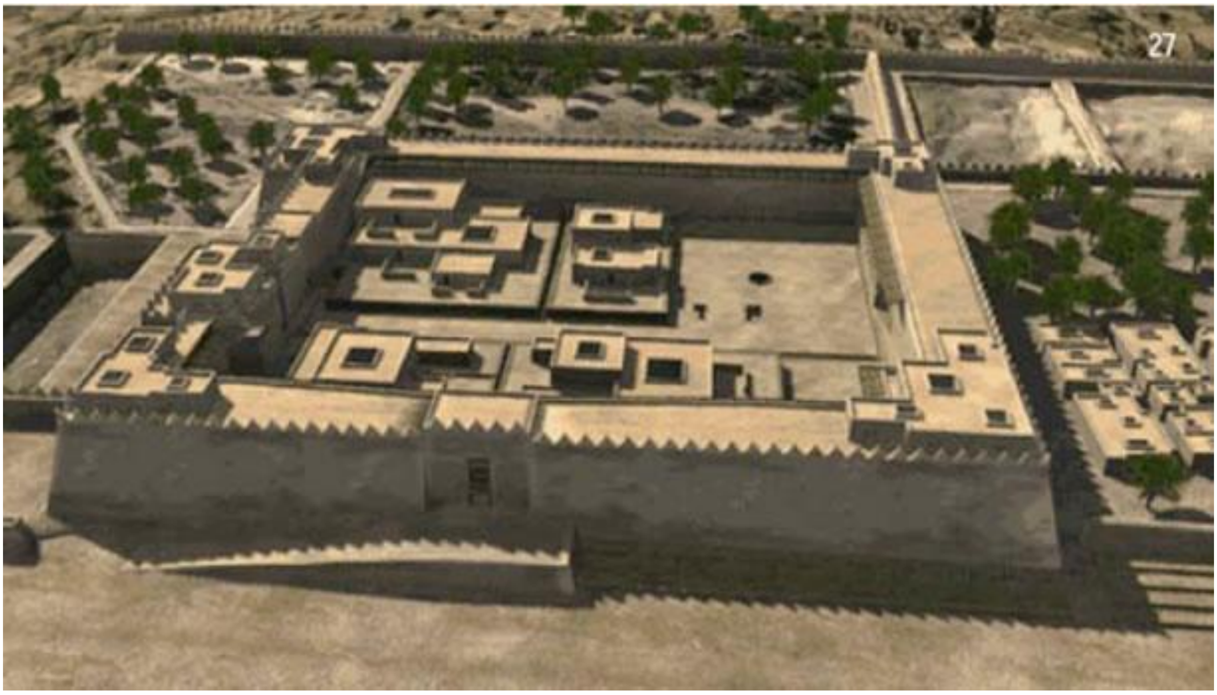
Aggressive architecture:

Fortifications of the Indus valley in the Mature Harappan phase



M.C. Petersen

Cover: Dholavira, reconstruction of the castle.
http://www.taisei.co.jp/kodaitoshi/civil_e/civilization.html

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MA research and thesis

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Aggressive architecture:

Fortifications of the Indus valley in the Mature Harappan phase

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Preface

Throughout the years of my study in archaeology, I developed a keen interest for the Harappan civilization in the Indus valley. A civilization which has been credited for being one of the four states of the ancient world. The Harappans followed their own path and some of their architectural achievements are unique in the world. Their well planned settlement layouts, imposing forms of architecture and their ‘obsession’ for water and cleanliness made a great impression to me. The people seemed occupied with building houses, trading goods or catching fish. The romantic descriptions of the Harappan civilization made this culture look so idyllic. However, some while ago I read a critical article about the so called peacefulness of the Harappans (Cork 2005). This prompted me to do a research in a still largely unexplored area of the Indus valley research: The fortifications of the Harappans and their possible military character. This research has changed my view on the Harappan civilization regarding its peacefulness but this has not stopped my fondness of the Harappan civilization. On the contrary, it shows that there are aspects of the Harappan culture which are still waiting to be discovered.

My thank goes out to my family, friends and classmates who always supported me in some way or another. Although they made no direct contribution to this thesis, their help and friendship motivated me along the way. Thanks as well to Rob van der Veen with whom I travelled to India and Mongolia, had long talks about archaeology and in whom I also found a good friend. Special thanks to my supervisor I.R. Bausch for guiding me in the right direction and always urging me to be critical.

Chapter 1: Introduction

1.1 Fortifications

Fortifications throughout the world have been perceived as big, grandiose monumental structures. They are considered as inspiring monuments of the past and their construction would often have required a massive labour force. Fortifications can be "*understood as features that delimit boundaries of settlements or boundaries of specific areas within settlements*" (Düring 2011, 70). From a historical viewpoint, fortifications have always been seen as purely defensive. That this is an overtly simplistic view and not always the case is shown for example by Connah (2000). In Africa for instance the enclosure of settlements is common practice. Connah has noted that city walls varied in function from domestic protection, to formal military presence, as well as serving a variety of other functions. McIntosh & McIntosh (1993, 279) argue that other functions might have included flood protection, civic identity, and the restriction or control of outsiders' access to markets. However, as will be discussed in detail in chapter 3, some features of fortifications are purely militaristic and argue for a militaristic interpretation.

This thesis will deal with the question of fortifications, from a military perspective, in the Indus valley culture or Harappan civilization as it sometimes called. The ancient sites of India and Pakistan have left the world an insight into a unique civilization with many sites (large and small) which have fortification walls. Hundreds of sites are scattered around an area twice as big as Egypt with sizes varying from as small as 0.5 ha to 100 ha (see figure 1).

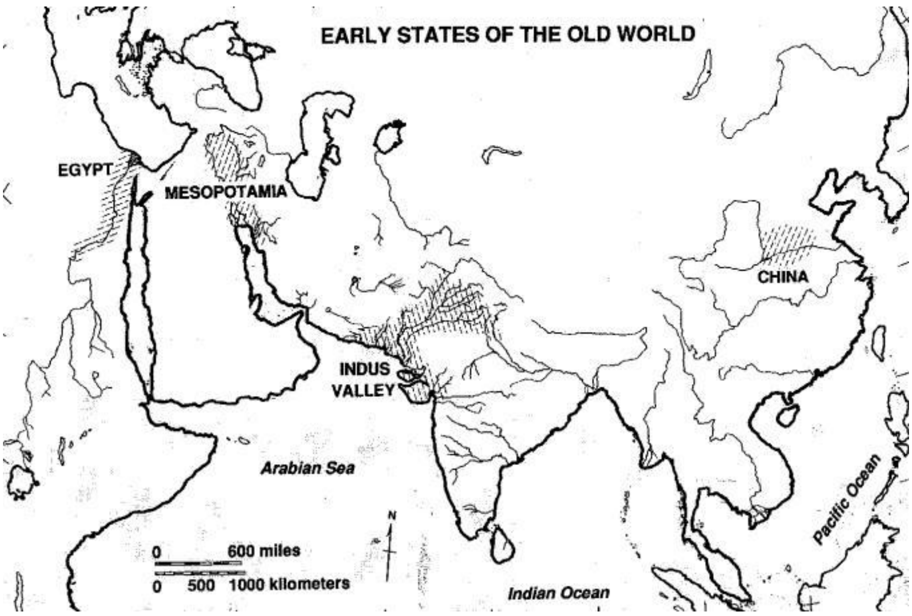


Figure 1. Ancient states of the world (after Kenoyer 1998, 16).

The Harappan culture starts to blossom in the so called Mature phase (2600 – 1900 BC) and has a rich material culture including seals, pottery, sewer systems and impressive architecture what might even be called monumental. This period witnesses a lot of new changes including the construction of fortifications. What was unique and surprising about this culture, in comparison with their Egyptian and Mesopotamian counterparts, was that there did not seem to be any temples or palace complexes. Although claims have been made for the presence of ritual fire temples, no real religious places were as such assigned.

Several attempts have been made to point to a ruling elite but due the absence of temples and palaces together with the supposedly small amount of weaponry, answers have mostly been sought in terms of ideology. Suggestions that were made included a class of merchants who controlled goods, a council of elders and priest-kings who ruled through religion/ideology (See Kenoyer 1998; Possehl 2002b).

Claims for a classic ruler ship (state/religion) involving a military force have been downplayed from the beginning since the Harappan culture showed to be different from their Egyptian and Mesopotamian counterparts. This has led that the interpretation of fortifications have been sought in symbolic terms and also as water barriers (e.g. Kenoyer 1998; Kesarwani 1984; Rao 1979; Srivastava 1984). In fact, the issue of fortifications was never really researched very well as will be explained further below. However, similarities found in pottery, seals and other aspects of material culture implied some form of direction and control. Moreover, the layout of the cities suggested planning, organisation and perhaps a ruling power.

This thesis will therefore look at the function of the fortifications in the Mature phase from a military point of view. By military I mean social and cultural concerns related to (and derived from) the armed forces and war. The definition for warfare follows Van der Dennen (1995). He thoroughly explored different views and definitions of warfare and noted five criteria from which the following definition of warfare can be made: Warfare is the legalized use of violence against multiple members of another community aimed at killing or inflicting injury on these members by some members of a community which are organized for that specific purpose (Van der Dennen 1995, 93). This thesis does not suggest fully equipped armies or organised war. It aims to evaluate the hypothesis of the Harappan civilization being a warless society by looking into the possible military use of the fortifications.

1.2 Relevance

In my opinion, there are three main reasons why the fortifications in the Indus region need more research. First of all, the issue of fortifications in the Indus has never really been looked into. Only Mate (1970) has tried to summarize aspects of fortifications from different sites but his findings are scanty and very much outdated. New excavations haven taken place at various sites since his publication and could give more information than presented so far. More recent work on fortifications comes from Deloche (2007) and Joshi (2008), but they too present a very short summary concerning the Harappan fortifications. Kesarwani (1984) has done more research on the fortifications of the Indus but he only focuses on the issue of gateways, neglecting other features such as bastions and moats. Other scholars merely just mention the fortification walls and label them as flood barriers without giving too much details (e.g. Srivasta 1984; Rao 1979; Kenoyer 1998).

Secondly, the issue of military in general, not only fortifications, is neglected due to statements from early excavators in the Indus. Most notable there is the work of Marshall (1931, 497) who stated that blades found at Mohenjo-daro would not make very good weapons of war because the blades were too thin and would break even under moderate pressure. Marshall (*ibid.*) also mentioned the scarcity of weapons; a statement which has been repeated uncritically by succeeding scholars (see Lal 1997, Agrawal 2000). However, as Cork (2005, 411) points out, these statements are doubtful since they are based on a flawed comparison between the Mesopotamian and the Harappan data; the Mesopotamian weaponry is mostly derived from a funerary context whereas the Harappan metalwork derives from domestic contexts. The supposed scarcity of weapons and the hasty conclusion that Harappans did not actively participate in war might have influenced the interpretation about function of the fortifications as well.

Thirdly, another aspect which negatively influenced military research in the Indus was the research of Sir Mortimer Wheeler. Wheeler (see chapters 4.3 + 4.4) actively searched for fortification walls and designated them as military or having at least military implications. However, together with his findings he stated incoming Aryans as the enemies which caused destruction and the end of the Indus civilization (Wheeler 1961, 249). Sufficient evidence was never found for his theories and the issue of military was neglected thereafter. Moreover, this issue has sensitive connotations. Hindu nationalists (Hindutvas) see the Indus as the cradle of civilization, as an autochthonous product of technological improvements. Incoming Aryans, or any other groups, do not fit in this picture and according to Hindu nationalists such ideas are used by anti Indian activists to mobilize the lower caste against the higher ones, the apparent descendants of the Aryans (Elst 1999, 19-21).

So a lack of detailed research into fortifications (as well as weapons), uncritical research that contributes to cite early ideas and biased opinions have all negatively influenced the research into military aspects in the Indus civilization. This asks for a more detailed look. It must be realized however that the acceptance of the statements of Harappan being a warless society have major implications for the interpretation of the internal organisation of this civilisation. Rather than having physical force, the explanation of social coercion has been sought mainly in terms of ideology (e.g. Kenoyer 1998; Miller 1985; Possehl 2002).

1.3 Research question

A lot of questions can be raised relating to fortifications. An important first question involves the reason why the fortifications were being built. Were the fortifications purely erected as defensive structures? If so, it is important to know whether or not the walls were strong enough to withstand any violence or that the fortifications show any signs of violence. Or do the fortifications have a more symbolic function and were they constructed to impress and show superiority? Furthermore, the location of the walls could tell us more about the function. What was inside the walled area? Was it important enough to be protected?

Construction projects such as the fortifications also imply organization and power, the organization to arrange a labour force and the ability to do so. This raises other questions such as: Were the defences built by local population or by a taskforce? How long did the construction take place? Do they reflect long term planning for a larger future population?

To answer all these questions is outside the scope of this thesis. My research question will be to try and determine the function of the fortification walls and more specifically to assess if they perhaps had a militaristic function. In order to assess this question, I will evaluate whether the fortifications have military features which can be related to a possible military function. However, other possible functions, like disaster management as explained earlier by scholars or symbolic functions will also be assessed.

Furthermore I will explain the results of the presence of the fortifications and their features in terms of three variables (location, site size and structural history). In other words, what could it have it meant for the Harappan society.

In order to obtain a site sample a selection of the sites has to be made. Although I have tried to make a representative selection of the sites (see section 1.4), I do not intend to draw a conclusion for the entire Indus Valley culture based on the selected data. My assessment of Harappan sites being military (or not) will be only for the selected sites and not the entire Indus civilization.

1.4 Material and method

To research the main question as stated above, I will examine eight sites in the Mature phase (2600 to 1900 BC) of the Indus valley civilization. The eight sites are Banawali, Harappa, Kalibangan, Mohenjo-daro, Dholavira, Kuntasi, Lothal and Surkotada.

I will look for features as identified by Keeley *et al* (2007, 55) who state that features such as the bastion, defended gate and some types of ditches have a primarily military function (see chapter 3). I will follow Keeley *et al* (2007) in their designation of the bastion, gateway and V-sectioned ditch as having a <u>primarily</u> military function. Next to that, I will look at <u>secondary</u> indicators of the structures which might have military functions. A tower could be a secondary indication of a military function for example.

In chapter three, before presenting the data, the primary and secondary features will be explained together with a more detailed methodological approach. When discussing the fortifications and its military aspects, the reader may find technical military terms with which he/she is not familiar with. Therefore, a glossary is inserted and can be found in appendix I. The definitions are adapted from *A Dictionary of military terms* by Dupuy *et al* (1986).

The data concerning the fortifications will be presented in chapter four where every site will be examined. For most of the sites I could obtain excavations reports. For the sites for which I had no access to these reports, secondary sources were used (e.g. articles). The case studies should give enough data about the military aspects of the fortifications and are provided with site plan and pictures of relevant structures. Additional pictures can be found in appendix II.

Although the fortifications and its military features are important in this thesis, the function of the fortifications will be discussed in three possible ways. First the fortifications as a protection against flooding will be examined. Secondly the military function of the fortifications and its features will be assessed and thirdly a possible symbolic function of the fortifications will be explored.

The presence of primary and secondary features will be summarized in tables to present a clear overview. The results are then explained in terms of three variables which are location, site size and construction development through time. These three variables could possibly tell more about the fortifications in general and about Harappan society. The tables that accompany these results can be found in appendix III.

1.5 Theoretical approach

In order not to neglect any other function, fortifications as being monumental architecture will be explored. Building the fortifications hints to the capability to organize manpower and access to (a lot of) materials which hints to power. A corollary function could therefore be monumental architecture which has its own practical functions.

According to Trigger (1990, 122), monumental architecture can have several functions. It can function as a tool of power, to reinforce status of rulers and it could also be erected to intimidate potential enemies. Clarke and Martinsson-Wallin (2007, 32) argue that monumental architecture could be seen as a victory monument which symbolizes the dominance of one group over another. Finally, the concept of DeMarrais *et al* (1996) will be explored. They view monumental architecture as a *materialization of ideology* to be used as a source of power.

When explaining the pattern 'construction development through time' I will use the work of Mann (1986). Mann (1986, 1) views military as major source of power which he links to the beginning of a state. Military as a source of power will be not be discussed but his ideas related to the beginnings of a state are worthwhile exploring. These approaches will be further explained in chapter 3 and in chapter 5 these ideas will be discussed in more detail in relation to the fortifications.

1.6 Limitations and potential problems

Throughout this research I have consulted various excavations reports. The reports are published by different authors and therefore do not always have the same procedure for documenting their data. Some of the data used in this thesis is obtained from old excavations report with a poor stratigraphic control. The excavators at Mohenjo-daro (Marshall and Mackay) for example, assumed a consistent rate of vertical growth of the structures. They figured that sectors of the city expanded upwards by a certain height within a certain time interval and used elevations of thresholds and floors as indications for their chronological horizon. However, structures which belong to the same period and which are even built next to each other, can differ in elevation by several meters (Jansen (1991, 162). This strategy was subsequently adopted by Vats (1940) for Harappa as well. This is a serious issue and the chronology of Mohenjo-daro and Harappa should be treated with caution. Banawali and Kalibangan have no chronological subdivision for the Mature phase. The Mature phase (see 2.2) is generally dated from 2600 to 1900 BC (this differs from site to site) which makes the structural history at these two sites to be treated with caution as well.

Furthermore the excavations have often been partial, limited, and the outcome has been of varying quality. Sometimes more attention is paid to the stratigraphy, the classifications of layers and strata than to specific characteristics of the defence sites. Archaeologists might not recognize specific features or prioritize other features. And as Deloche (2007) puts its "*archaeologists are not necessarily experts in military technology*" (Deloche 2007, 3). This explains why excavation reports all mention different definitions used for certain elements. The terms 'retaining wall', 'revetment wall' and 'curtain' might have all been used by different excavators for the same features (not always) throughout the literature. This makes it difficult and doubtful to designate certain features since I can only judge from pictures and site plans. It is therefore difficult to give a consistent, systematic presentation of the military works.

Unfortunately, brick robbing took place at the ancient mounds of Mohenjo-daro and Harappa. These two ancient mounds were systematically robbed from their mud bricks which were used for building the railway line between Karachi and Lahore in 1856 (Rao 1991, 38). Potential important structures may have been destroyed due the re-use of bricks in 'modern' structures. This is obviously a sad loss for Harappan research and it could mean that the complete picture will never be unraveled.

These are quite important issues that cannot be solved. However, the aforementioned three primary features and the secondary features should provide enough clues to understand the functions, and definitely shed more light on, Harappan fortifications.

1.7 Structure of the thesis

In Chapter 2, the Mature phase of the Indus civilization is highlighted. It describes the beginnings, aspects of material culture and other characteristics to give to reader a background of the Indus civilization. In Chapter 3 the methodology is explained where terms will be defined and the method of research will be set out. Chapter 4 will describe the case study with an analysis of the data. Different sites of the Indus civilization in relation to their fortifications will be examined. The presence of bastions, defended gates and ditches will receive particular attention. Chapter 5 discusses the possible functions of the fortifications from three perspectives: 1. the fortifications as flood barriers, 2. the fortifications as military structures, and 3. the fortifications as monumental architecture.
Then, the fortifications and their features will be explained according to three variables location, site size and structural development through time. The chapter ends with a discussion of the possible function of the fortifications. In Chapter 6, the issue of warfare in Harappan society will be briefly discussed. Eventually a conclusion will be presented in Chapter 7 in which an answer to and an evaluation of the research question is given.

Chapter 2: The Indus valley culture

Before actually presenting any data about the fortifications the Indus valley, it is useful to give an overview of the Indus culture and aspects of its material culture. The Indus Valley culture has archaeological sites in eastern Pakistan and Northwest India and is named as such due to the fact that many of the first sites discovered were located at the river Indus and its tributaries. The Indus culture is also often called ‘Harappan’ after its first discovered site Harappa. There is enough evidence to suggest that this culture was a complex social society judging from the level of urbanization, its technological achievements and its economy. This chapter will look at different aspects of the Indus Valley culture to give the reader a clear picture of what the Harappa culture entails.

2.1 Beginnings

The first reference to Harappa was by Charles Masson in 1826. However, the ruins at that time were not yet recognized as an Indus valley site. Alexander Cunningham was the first archaeologist to visit the site in 1853 and 1856 but he misidentified Harappa. In approximately the same time period Mohenjo-daro was discovered some 600 km southwards. Unfortunately, these two ancient mounds were systematically robbed from their mud bricks which were used for building the railway line between Karachi and Lahore (Rao 1991, 37-38).

It took until the 1920s before the ancient mound at Harappa was excavated and the publication of the iconic Indus seals by John Marshall in 1924 made the Indus civilization widely known. The ancient mounds of Harappa and Mohenjo-daro were recognized as being part of a hitherto unknown prehistoric civilization. Soon it was discovered that these sites had a cultural connection and were called twin capitals (Possehl 2002b, 3).

Numerous excavations took place in the previous century at various sites, uncovering a wealth of information about the Indus valley. Important persons in the early days of Indus scholarship were Sir John Marshall, Ernest J.H. Mackay, Madho S. Vats and Sir Mortimer Wheeler who excavated at the important sites Harappa and Mohenjo-daro. Although their work does not meet present archaeological standards in some respects, their work can be seen as seminal for the field. In the later part of the previous century excavations followed at more sites providing further information about the Indus valley culture. Gregory L. Possehl, Shereen Ratnagar, Michael Jansen and Jonathan M. Kenoyer have also contributed heavily with fruitful articles and works about the nature of the Indus valley culture. Steve Farmer, Asko Parpola and Iravatham Mahadevan have been mainly specializing in the Indus script and their work is often quoted in this context.

One of the most controversial issues in Indus valley research concerns its ethno-cultural identity and is centered around the Rigveda. Most Indologists date the events from the Rigveda in the second millennium BC, somewhere around the 13th century (Kulke & Rothermond 1994, 34). Other views exist and some Indian archaeologists indentify the Harappan civilization with the culture described in the Rigveda (e.g., Gupta 1999, Lal 1998, 2002). According to these scholars the Vedic texts can be legitimately used to reconstruct the culture of the Harappan civilization. Their motives are nationalistic driven and in this way they push back the time in which the events of the Rigveda have taken place to give India as a nation a superiority but also ownership. The latter links with the Aryan invasion theory which stated that incoming groups (Aryans) were responsible for the introduction of the Indo-European language. The Hindutvas, nationalists in India, reject this theory and claim that the people who composed the Vedas were Aryans and were indigenous to India. This means that the present Hindus are direct descendants of the Aryans and the inheritors of the land since the beginning of history. In order to achieve this, the presence of Aryans has to be pushed back further in time though (Thapar 2000, 16). This affects research in a negative way and there are numerous of examples in which archaeology has been misused for political goals (see Guha 2005).

This has not stopped research in the Indus valley though and today more than 1500 settlements have been discovered. These sites are located in northwestern South Asia in an area extending over 680.000 square kilometers (Kenoyer 1998, 17). Most of the 1500 settlements can categorized as small villages, being 1 ha to 10 ha in size. In the Indus Valley, five major urban centers have been identified. These are Mohenjo-daro (200 ha), Harappa (150 ha), Dholavira (100 ha), Ganweriwala (80 ha) and Rakhighari (80 ha). These urban centers were located along major trade routes and are surrounded by vast agricultural lands, rivers and forests. Of these five urban sites, only Ganweriwala remains unexcavated and Rakhigarhi is currently under excavation. The other three urban sites are part of the data sample to which Banawali, Kalibangan, Kuntasi, Lothal and Surkotada are added. Figure 2 gives a detailed look of the Indus Civilization together with the sites examined in this thesis which are numbered 1 to 8, see table 1.

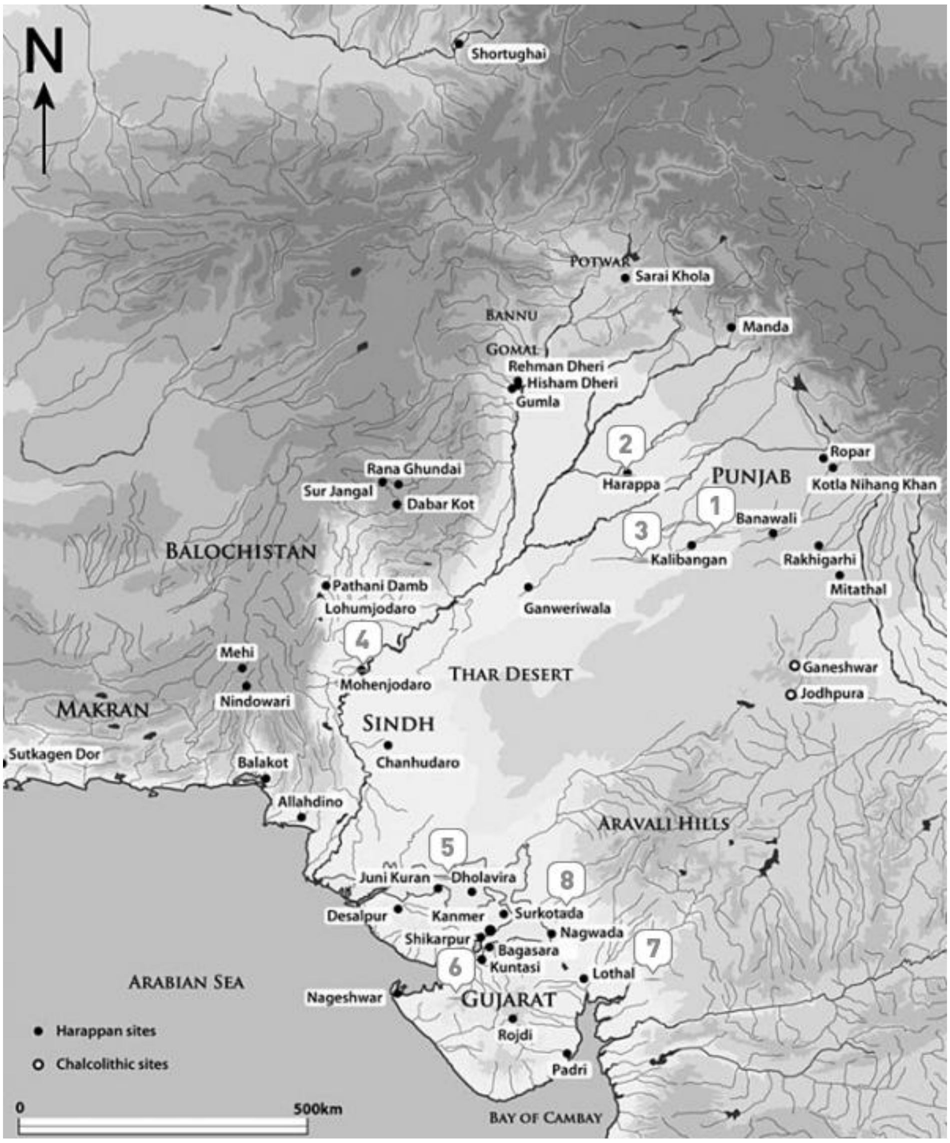


Figure 2. Map of Indus valley with sites with sites mentioned in the text

www.antiquity.ac.uk/projgall/agrawal323/

Table 1. Sites highlighted on figure 2 with their size and geographical location

Nr.	Geographical location.	Site	Size
1.	Northern region	Banawali	15.5 ha
2.		Harappa	150 ha
3.		Kalibangan	13 ha
4.	Western region	Mohenjo-daro	200 ha
5.	Southern region	Dholavira	100 ha
6.		Kuntasi	3.3 ha
7.		Lothal	5.5 ha
8.		Surkotada	2 ha

2.2 Chronology

The period from the beginning of domestication of animals and plants in the Neolithic until the emergence of the historical period with the identification of an archaeologically new culture, Painted Grey Ware, is called 'Indus Valley Tradition'. This tradition can be divided in four big phases.

Early Food producing era: 7.000 to 5.000 BC

This first period is characterized by the employment of microlithic tool technology by many people. There is evidence for the use of domesticated animals, such as sheep and goats. Different types of pottery appear as well as different kinds of stone and this period also bears evidence that trade took place. In later phases of this period there seems to be increase in sedentary communities (Possehl 2002b, 32). An important site from this period is Mehrgarh which provided a lot of information about the roots of sedentism and the early village farming community (Possehl 1990, 261).

Early Harappan: 5.000 to 2.600 BC

This phase is characterized by different pottery designs, ornaments, architectural developments and methods of farming and animal herding, and saw the invention of new technologies: wheel-thrown pottery, copper metallurgy and stone bead production. Towards the end of this period trading networks expanded and seals and rudimentary writing appeared. Moreover, this period is thought to be a period of formative urbanism (Kenoyer 1998, 26).

Mature Harappan: 2.600 to 1.900 BC

This phase saw the synthesis of different cultural groups. Unifying symbols appear on painted pottery as well as standardized weights and measures. Architectural innovations, such as wells, baths, drainage and sewer systems are part of the Harappan material culture. New technologies such as city planning, mastery of maritime sailing, sophisticated drilling techniques and pyrotechnological achievements all make their entry in this period (Possehl 2002b, 58). The focus of this thesis will be this period because this period can be seen as the most prolific of the Harappan people. Big changes occur in Harappan society and the fortifications are now part of Harappan settlement building.

Late Harappan: 1.900 to 1.300 BC

In this phase, the former economic and political structure of the previous phase disappears. The cultures of each region became disconnected from each other, unifying styles are not seen in the archaeological record anymore and the iconic Indus seals

disappear. Furthermore, big changes occur in burial practices and ritual objects and the Indo-Aryan languages were becoming common (Kenoyer 1998, 26).

2.3 Geography and subsistence

The major centers of the Indus valley are located within two major river systems, The Indus and the Ghaggar-Hakra Rivers. The Indus river flows from the Himalaya and passes to a great dry zone before it reaches the Arabian sea. The other river, the Ghaggar-Hakra, flows through Pakistan and India. Both rivers have sustained the people of the Indus culture for millennia (Wright 2010, 1).

The Indus river has very fertile alluvium soils and together with the Ghaggar-Hakra river and its tributaries it has made extensive agriculture possible. The agricultural activities of the Indus people took place during the *rabi* winter season when the active plains were intensely cultivated. As farmers and herders, the Indus people seemed to have adopted barley as their principal food grain. In the southern part of the Indus valley, the people were also cattle keepers and raised animals such as goats, sheep and water buffalos. Dates and grapes also belonged to their subsistence package as well as different species of fish (Possehl 2002b, 64).

The Harappans were experts in building drains (see next section) and some of them were probably used as irrigation channels besides waste channels. Wells have also been used and at some sites, large water tanks or reservoirs were discovered that might have fulfilled this task as well (Kenoyer 1998, 163).

The people of the Indus valley built their settlements in the fertile plains of the Indus and for their agricultural activities they were largely dependent on the flooding of the Indus. It could therefore be argued that defenses were needed to protect themselves against flooding. The fortifications that surround a lot of the Indus settlements could be seen as barriers to block the water, as has been suggested by several scholars (see 1.2). This idea will be discussed in Chapter 5.1.

2.4 Trade

The beginning of the mature Harappan phase at 2600 BC saw a revolution in maritime technology which led to a significant change in maritime activity, providing an important impetus for Indus trade (Possehl 2002b, 215). Indus trade was primarily focused on supplying the cities within the Indus valley with food and raw materials.

Within the Indus itself, there were limited resources for metals, stone and minerals. There is evidence that suggests that the Harappans might have visited Oman to

smelt or to collect copper from local groups. Harappan artifacts such as chert weights, stray ivory combs and signs inscribed on distinctive jars have been found. In Bahrein (identified as Dilmun) as well, there is evidence of Harappan contact: etched carnelian beads, ivory and the Harappan weight system were found (Ratnagar 2001, 52-53). Especially etched beads seemed important Harappan export products which were found at numerous sites in Mesopotamia and in Iran as well (Possehl 2002b, 222-223). There are also hints of contact with Turkmenia and at some sites in the Indus valley, bronze pins were found which are very Central Asian (Ratnagar 2001, 51). Moreover, advancements in Arabian en South-east Asian archaeology are suggesting that certain millets spread out of Sub-Saharan Africa into Asia. Evidence, such as food grains have been found at sites in India and Pakistan (Possehl 2002b, 218).

In Mesopotamian records, the name *Meluhha* appears in texts and is referred to as a land where ships with goods came from. And although not everyone agrees on the location of *Meluhha*, the majority of the scholars agree that the Indus valley civilization is ancient *Meluhha*. The Mesopotamian texts with references to Meluhha are dealing mostly with economical practices (Possehl 2002b, 218-219).

Kings and queens of Ur (Mesopotamia) were buried with elaborate ornaments and objects. These objects include items from the Indus valley such as biconical carnelian beads and decorated carnelian beads. Mesopotamian texts also describes numerous other imported objects such as hard wood, shell ivory as well as animals such as the peacock, a cat and even monkeys (Kenoyer 1998, 97-98).

It is interesting to note that the people of the Indus valley seem to have exported more goods than they imported. The export combined with their resourceful rich hinterland suggests that the Indus valley was a prosperous civilization. Does it seem odd therefore that they needed some kind of defense to protect their materials? In this respect, the fortifications might have had a more military function as a way to defend their resources.

2.5 Changes in material culture and architecture

The distinction between mature Harappan and its previous phase showed a lot of differences in material culture. While already in the early Harappan phase changes and improvements appeared that showed signs of urbanism but the real innovations and changes in material culture occur in the mature phase.

A new style of distinctive pottery emerges. It is heavy and thick-walled making it very strong and was usually given a red slip. Popular motifs were the pipal leaf, the intersecting circle and the peacock. Baked brick architecture, town planning and brick-

lined well technology are important new features in mature Harappan phase. Other technologies that appear are bead making technology, writing and drilling hard stone beads (Possehl 2002b, 51).

One of the most remarkable features in the mature phase is the subject of architecture. Towns in the Indus valley show evidence of well thought planning, streets with wells are present at various places and drainage en domestic and special buildings are part of planning. The streets and buildings were orientated according to cardinal direction; east and west, and north and south (Kenoyer 1998, 52).

Miller (1984) sees in the layout of the sites, the cardinal direction of the streets and the sometimes higher elevated area in the west a pattern. Ideology forms for him the basis of power as "*a parallel between the control over nature and that over people*". He sees a society with an extreme normative order in which power may be ascribed to charismatic individuals. Luxurious goods could have been forbidden by embargoes or sumptuary laws (Miller 1984, 60- 63).

The drainage system was well known at most Harappan sites and various types of drains existed. There were open or covered drains and at Harappa, Mohenjo-daro and Lothal they were built below the streets. That the Harappans had an excellent idea of engineering is well attested by putting in the correct gradient for the floor of the drains. Moreover, the carrying capacity was kept perfectly in view in building the drains (Joshi 2008, 129).

Further architectural technologies are the 'Great Bath', located in Mohenjo-Daro, which is a large water tank of 12 meters north-south and 7 meters wide (see figure 3). Both the northern side and the southern side had staircases leading to the bottom. The floor is fitted with gypsum plaster and has a layer of bitumen which makes it a water tight structure (Joshi 2008, 127). It is suggested by most scholars that this tank was used for special religious functions where water was used to purify and renew the well being of the users (Agrawal 2007, 74).

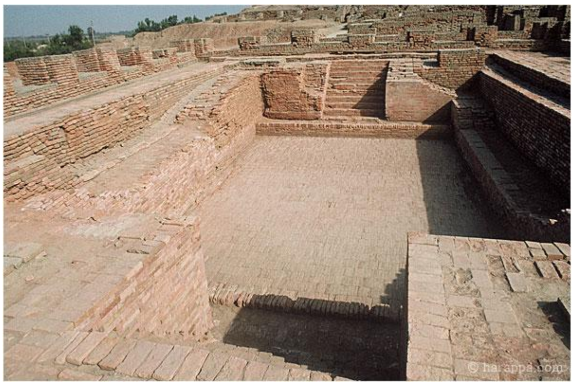


Figure 3. The great Bath, Mohenjo-daro
(http://www.mohenjodaro.net/greatbath25.html).

Possehl (1998) sees the changes and innovations in architectural elaboration, town planning, layout, water acquisition and management as part of a (new) ideology. Especially *wasserluxus*,[1] played an important role in Harappan society. This can be in the seen in the presence of a large amount of wells at Mohenjo-daro, draining systems, bathrooms and bathing platforms which clearly shows the importance of water and cleanliness in Harappan life (Possehl 1998, 56-58).

It is interesting to note that that architecture and ideology seemed to be linked at Harappan sites. The layout of the sites and the architectural features related to water could be part of an ideology as suggested. This could mean that other architectural features such as the fortifications could perform an ideological function as well. An option that will be discussed in Chapter 5.3.

2.6 Leadership

As can be read from the aforementioned chapters, the Indus Civilization knew a high degree of urbanization as can be seen by the state of the art architecture, town planning and engineering and other innovating aspects of material culture. This kind of urbanization to control labor force implies a sort of organization which has led several scholars to form their opinion about possible ruler-ship.

The internal structure of the Indus valley civilization has often been explained as being state level or as an archaic state (e.g. Kenoyer 1994; Possehl 1998; Ratnagar 1991). However, in evaluating the Indus valley culture as being a state, scholars usually neglect a military presence or the use of force as means of social coercion. Ratnagar (1991) however is skeptical about this statement. There is however not much evidence concerning administrative practices, an often named criteria for states. The excavations in the Indus valley yielded no clay-tablets, or any other records of which some kind of bureaucracy could be derived. The Harappans knew writing though and although the seals of the Indus valley are not yet deciphered it is generally assumed that it represents some form of (archaic) writing.

Since the start of Indus research, scholars have looked to explain leadership in terms of ruling priests and kings (see figure 4).

[1] A term adapted from M. Jansen (1993a), Mohenjo-daro: Stadt der brunnen und kanale, Wasserluxus vor 4500 Jahren



Figure 4. The statue known as the 'Priest-King' (http://www.teacherplus.org/2008/july/questioning-the-aryan-invasion-theory).

Figure 4 supposedly shows a priest king. It was found in Mohenjo-daro and termed "*king-priest*" (Marshall 1931, 91). Wheeler (1966, 18) suggested henceforth that leadership consisted of a "*combined kingly and priestly rule"*. Lal (1997, 237) also sought in that direction and postulated "*priest-cum- administrators*" as rulers who performed and guided the rituals (Lal 1997, 237). Kenoyer (1998, 17) keeps more possibilities open when he writes that there may have been "*wealthy merchants, powerful landlords or spiritual leaders*". He furthermore thinks that these leaders were responsible for the organization of the streets, houses, wells and drainage facilities and that the Indus rulers appear to have led their cities through trade and religion (Kenoyer 1998, 81). Possehl (2002b, 57) for instance, feels that the Indus people were ruled by "*a series of councils or gatherings of leaders, rather than a king*" in which age and gender, but adherence to ideology played a big part as well for determining leadership.

This shows that, explanations are mainly sought in ideology and ritual. Militarism or forms of social coercion a way to rule is mostly ignored. Perhaps, a possible military function of the fortifications can offer another perspective in this matter.

Chapter 3: Methods and theory

The function of the fortifications can be divided into two broad categories, namely a practical function and an ideological one. While the practical function can be deduced by looking and analyzing the structures and features, the ideological one is more theoretical. This chapter describes the basis for further examination of these functions and the methodology to determine this.

3.1 Fortifications as a flood protection

The only explanations so far given about the Indus fortifications suggests that the walls acted purely as a flood barrier (see also chapter 1.2). Rao (1979, 136) asserts, probably backed by his own investigations at Lothal, that the defense walls at other sites in the Indus could also have been anti flood measures. Rao (1979, 33) calls the defenses at Lothal *a bund*, a term which is used to denote a barrier to block water which, sometimes is called a dike as well. Kenoyer (1998, 173) as well, notes that the massive walls were defenses against flooding.

I think these explanations are flawed. First of all, these statements have never been tested and secondly it does not explain the presence of military features seen in Harappan fortifications. Why do some fortifications have bastions, defended gates and ramparts when their function is primarily to block the water? Furthermore if the evidence at one site shows that the walls had a primary function to act as protection to the water, does this mean that this was the function at other sites as well? This is simple reasoning and these statements should be critically addressed, even more when this is not fairly tested.

Fortifications or walls have been used as defensive structures to protect settlements and inhabitants against water. Therefore this possibility does not to be ruled out *a priori*. In this respect, the platforms have to be mentioned. At some of the Indus sites (see chapter 4) huge platforms were found, upon which the structures were built. The platforms at some sites have been interpreted as being used to raise the settlement above floodplain and to protect them from floods (see Janssen 1994). If this is true, the fortifications could have another function and therefore the presence of platforms at sites will be examined.

The main focus of this thesis will be the military aspects of the fortifications. In order no to neglect any other possible functions I will address the issue of the fortifications being used as a flood protection. I will examine the ideas of Rao and others that the walls were flood barriers in chapter 5.1. To do this as critically as possible I will use the work of Raikes, a hydrologist who did extensive research of flooding in the Indus valley (Raikes 1965, 1984).

3.2 The fortifications as military structures

An important question for the militaristic practical function is the interpretation of defensive architecture. Which kind of architectural features can be considered as purely having a military purpose and which features are not? Taking into account the time period researched in this thesis (2600 - 1900 BC), only features of fortifications from pre-modern times will be evaluated.

According to Lambert (2002), material and resources that are invested in the construction of defensive structures can help define perceptions of threat. The appearance of features such as walls, forts and towers should correlate with a perceived need for defense that is sufficient to justify reallocation of labor and material (Lambert 2002, 209-210). Although the idea that if more resources were used for a defensive structure than more defense was necessary seems logical, it is a generalizing concept. It does not take other possible functions into account which makes the interpretation of these features having a military function debatable. Therefore, great investments in fortifications alone doe not directly mean that fortifications had a military function.

Alusik (2007) is clearer on this issue and uses criteria when interpreting defensive architecture of Prehistoric Crete. Alusik sees the dominant position in the landscape, construction technique and the width of walls as criteria of defensive architecture. Tower like structures and 'guardrooms' belong to a secondary category and have to be judged in relation with other features (Alusik 2007, 15). Concerning the construction techniques and width of the wall; these can also point to the monumentality of a structure. Therefore I think these are not primary indicators of military functionality.

With regards to the dominant position in the landscape, Burke (2008) points out that site selection was a major concern for establishing a defensive settlement. Such factors would include the availability of water, defensibility and proximity to routes. Burke stresses the importance of a secure water source near the settlement since it was needed for mud-bricks. The defensibility could also be judged from the presence of natural barriers which protected the site (Burke 2008, 77). However, according to Keeley *et al* (2007), 'strategic' locations are not always unequivocally defensive and cannot always be identified in the archaeological record (Keeley *et al* 2007, 56). Keeley *et al* (2007) are very clear in their argument and state that there are three features of fortifications that are unequivocally militaristic in function. These are:

1. The bastion: A projection from the main wall upon which defenders could fire on attacking enemies

2. A defended gate: The entrance in a fortification

3. The V-sectioned ditch: A type of moat which makes it difficult to cross

These three features are found in all cultures throughout the world and are not mere stylistic features. Moreover, such features are historically documented as being militaristic defensive (Keeley *et al* 2007, 55). In my opinion Keeley *et al* (2007) offer the most satisfactory and clear explanation of defensive features of fortifications. Therefore I will follow Keeley *et al* (2007) and use their designation of defensive features of fortifications. The aforementioned three features are primary indications of military functionality.

I do agree with Alusik (2007) that there is a second category of features which might shed light about the general function of fortifications. Examples of secondary features are:[2]

1) Rampart: Embankment comprising the main defensive work.
2) Salient: A part of fortifications that projects outwards toward enemy territory.
3) Tower: Structure from which a person can observe enemy activities.
4) Parapet: A defensive work.
5) Postern: A small back or side door or gate for inconspicuous movement.
6) Walls, thickness of.

All these features might tell something about the defensibility of the fortifications. Guardrooms can also be indication of a military function, but the identification of such rooms leaves too much space for another interpretation. Therefore guardrooms will not be taken into account as secondary features. However, the function of (guard)rooms at entrances is much more justified as having a military function. This belongs to the category of the defended gate (see 3.1) and will be treated as a primary feature.

These features alone might not be indicative of a military function but in combination with other features it might shed more light to the function of the fortifications. Therefore I will divide the features into two categories: 1) Primary and 2) secondary indicators (see table 2).

Table 2: primary and secondary features of military function

Primary	**Secondary**
The bastion	Rampart
Defended gate	Salient
V-sectioned ditch	Tower
	Parapet
	Postern
	Walls, thickness of

[2] Descriptions 1 to 5 taken from Dupuy *et al* 1986. For exact definition, see glossary appendix I

Since the bastion, gate, and moat are primary indications of military function only these features will be explained in more detail. For a definition of the secondary features see the glossary in appendix I.

1) Bastions

Bastions are external projections of a barrier large enough to hold several defenders and their fire weapons. Their main purpose is to fire upon approaching enemies and their extra elevation increases the force of projectiles and serves for a better view of the defenders. However, their difficulty lies in assigning them archaeologically since most of the time only their bases survive. Usually they have large and solidly built foundations to support a heavier, higher superstructure. Different types and shape of bastions exist but the most common type was rectangular and square in plan (see figure 5). These structures were simple to built, spacious and therefore provided optimal space for defenders. Other types include circular, hemi-circular, pentagonal, triangular and trapezoidal forms (Keeley *et al.* 2007, 67-68).

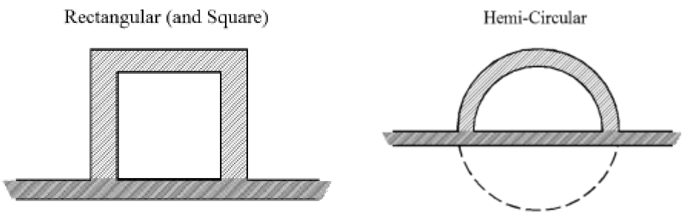


Figure 5. Different types of bastions (after Keeley *et al.* 2007, 69).

2) Gates

Gates are essentially gaps in the fortifications and are used for people entering and leaving. This makes gates the most vulnerable part of a fortification. They attract attackers for this and therefore enough counter measures must be taken for security. Gates can be divided into three types: baffled, screened and flanked.

Baffled gates belong to a category of long-used defensive gates. There is a variety of these types such as bent axis, offset, crab claw, serpentine, inset – outset, and labyrinthine (see figure 6).

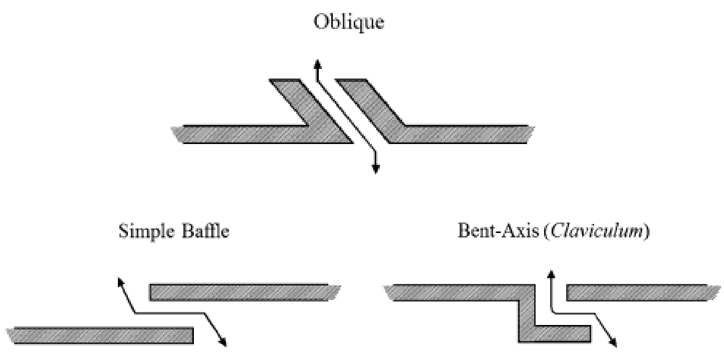


Figure 6. Different types of baffled gates (after Keeley *et al* 2007, 63).

The purpose of these kinds of gates was to expose the attackers flank and rear to the defenders. Ideally, a left turn (for the attacker) should be incorporated because this would expose the unshielded right side of the attacker. Posterns, small and narrow gates, belong to this category as well but were mainly used for peaceful traffic and are termed secondary gates.

A *screened gate* is another form. It actually is a paired baffle gate and requires the attacker to take a left and a right turn.

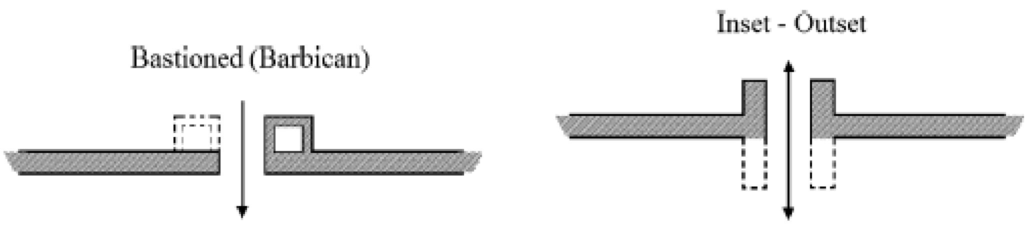


Figure 7. Different types of flanked gates (after Keeley *et al.* 2007, 63).

Flanked gates were gates with a straight or direct entrance but flanked with walls or towers creating a passageway, sometimes blocking both ends (see figure 7). It is a commonly used type because its form is better suited for every-day traffic. However, this would make the gate militarily more vulnerable than the other two types (Keeley *et al.* 2007, 62-67).

3) Ditch

Fortifications often used ditches parallel to their sides just outside their walls. This would discourage possible attackers from undermining the walls, breaking through the walls (by means of a battering ram) and keeping enemies at a distance. The V-sectioned ditch is the best example of this (see figure 8).

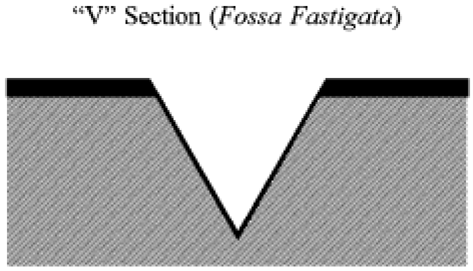


Figure 8. V-sectioned ditch (after Keeley *et al* 2007, 59).

V-shaped ditches have the advantage of consolidating sediments and rock strata which led to weakening of the roofs of tunnels when enemies tried to undermine the ditch. The width, depth and narrow bottoms made it not easy for an enemy to cross the moat and their steep sides were also a difficult barrier. The soil of ditches would be used to create earthen ramparts or to thicken the brick or stonewalls. Other purposes for V-sectioned ditches are not conceivable. Their sloping sides and narrow bottoms would make them difficult to excavate making it an inefficient source spoil and labor. Other types of ditches exists as well as variants of V-types but what V-types distinguishes from other types is that they expose the enemy to fire from the wall (Keeley 2007 *et al*, 58-60).

The bastion, the baffled gate and the V-sectioned ditch form an important part of fortifications and have a military purpose according to Keeley *et al* (2007,). If fortifications of sites in Indus valley are equipped with these features it could tell something about the fortifications being military. Therefore, certain sites in the Indus valley will be explored to check the presence of bastions, gates and ditches.

3.3 Fortifications as monumental architecture

After looking into the functional aspects of the fortifications, another possible function is being explored from a social/social-political point of view. The fortifications are part of public architecture and can be analyzed in multiple ways. Public buildings can function as stages on which social dramas occur or public buildings could be built to define, separate or exclude, or they can serve as monuments (Moore 1996, 2-4).

Monumental architecture is characterized in that its "*scale and elaboration exceed the requirements of any practical functions that a building is intended to perform*"

(Trigger 1990, 119). These could include well defended palaces, richly elaborated temples, funerary tombs and fortifications works. Symbolic investments can take a variety of forms in different societies such as decoration, (rare) materials, building on grand scale and shapes or forms of particular buildings (McGuire and Schiffer 1983, 281).

Monumental architecture can have different functions. First of all, the splendor of such buildings can reinforce the status of rulers and the state. The underlying meaning is that these monuments are seen as embodiments of large amounts of human energy and therefore as well the control of this energy (mostly in an unusual degree). At the same time it reinforces the low status of the individuals who are carrying out this task transmitting a sense of inferiority (Trigger 1990, 125-126).

Secondly, intimidation can also play a role and fortifications have been designed to scare off foreign enemies as well as potential thieves (Trigger 1990, 122). In this way, the fortifications have a more deterring role and are projected to outward enemies as well.

Thirdly, Clarke and Martinsson-Wallin (2007, 32) argue that in certain circumstances monumental architecture could be seen as a symbol of victory. Intergroup aggression over food resources for example, could result in the construction of monumental architecture which symbolized the dominance of one group over another.

These three possible functions are ideological in nature and can be categorized by the concept of the DeMarrais *et al* (1996). They use the term *materialization of ideology* which is an effective tool to be used as a source of power. Fortifications could be seen as materialized ideology. In contrast to other forms of materialized ideology such as ceremonies or items, monuments have a more permanent expression that link a group to its territory. Furthermore, they strengthen the association of a group and its place over a long period of time (DeMarrais *et al.* 1996, 19).

These different ideas about monumental architecture show that there are several functions monumental architecture could have. What this means for the Harappan fortifications will be explored in Chapter 5.3.

Furthermore, in chapter 2.6 it was explained that some scholars (Kenoyer 1994; Possehl 1998; Ratnagar 1991) have proposed that the Mature phase represented a pre-state or archaic state. This was done in a way which did not include the presence or the use of force as a means of social coercion. Others scholars propose that warfare was a fundamental element in the start of early states (e.g. Carneiro 1970). Michael Mann (1986) wrote extensively about the start of states and acknowledges four sources of power which were important catalysts in early states. The four sources of power are ideological, economical, military and political. With regard to this thesis, military as a source of power is important and will be looked into with regards to the fortifications. The reason

for choosing his approach is that Mann does not view military as a singly entity but rather as one factor of many. He explains that societies *"are constituted of multiple and overlapping and intersecting sociospatial networks of power*" (1986, 1). This thesis does not examine all four sources but the idea that warfare in a specific time was being employed (early states) and how this might be related to the Indus fortifications is explored.

3.4 Methodological approach

The Indus sites consist of more than 1500 sites which belong to different phases of the Indus civilization. Most of these sites have not been (extensively) excavated and are therefore not suitable for research. I have chosen the following sites to research: Banawali, Harappa, Kalibangan, Mohenjo-daro, Dholavira, Kuntasi, Lothal, and Surkotada (see map figure 2, page 9).

Some of the sites are quite large in size and will, I think, present a good case study. The assumption is made that larger sized sites will have more wealth, citizens and are probably the homes of the leaders/rulers and are therefore expected to have more defensive architecture than other (smaller) sites. As suggested by Ratnagar (1991, 46), large cities would be bigger targets for raids and attacks and the more frequent warfare was, the more people would be motivated to seek security in the larger walled cities. Therefore one could expect that more investment in fortifications (including defensive features) would be carried out at the larger sites. However, smaller sites should not be neglected either. They could perhaps tell something about militarism in general in the Indus valley culture. Finally, since the Indus civilization comprises such a big area, sites from a wide territory are included. Therefore, a balance between large site/small site and location of the sites was sought.

The beginning of the Mature Harappa phase around 2600 BC (see chapter 2) is associated with the increase in urbanism, the rise of new technologies, trading, architecture and the construction of massive fortifications walls. This phase ended around 1900 BC with the abandonment of different cities, the disappearance of certain technologies and the decline of the Indus civilization. I will look at the fortifications built in the Mature phase. This phase comprises such a long period though that a subdivision is useful. However, as noted before, some problems exist with chronologies at certain sites making this task problematic. To make a chronological subdivision as good as possible, I have summarized the constructional history of the site fortifications in tables which can be found in Appendix III.

In Chapter 4, the eight selected Indus sites will be examined to see if any of the three primary military criteria and secondary features are present. All sites are provided with their chronology and their site plans. At the end of Chapter 4, a summary is given of the military aspects of the fortifications and a table is presented to give an overview of the presence of bastions, gates and ditches per site. Also, in addition to the primary military features, the secondary features of the fortifications will also be noted which will be presented in another table. Finally, this table will also present the widths of the fortifications. This shows that more material and manpower was needed to fulfil such construction projects; in other words that more energy was invested in erecting these walls. This might point to other possible functions of the fortifications such as monumentality.

The fortifications and their features are subsequently arranged according to three variables. 1. Location, 2. Site size, and 3. Structural history. These variables might show patterns which could tell something about the Harappan society. The location for instance; (military) structures with certain predominant features built in a specific region could hint to a local tradition or perhaps to local conflict. The size of a site could point to importance or hierarchy of the settlement and could inform us about whether these sites were better protected or not. The last one is an important one since certain type of structures built in a specific time frame could point to similar processes being present at a specific time in Harappan society.

Furthermore, at certain sites in the Indus (Mohenjo-daro, Surkotada), the area is divided in two distinct parts, a citadel and a lower town. In general the citadel was built on artificially raised ground and was separated from the rest of the habitation. With regards to the term *citadel;* it is generally used for designating "*a permanent fortified structure standing alongside or within a town to serve as the final line of defense"* (Corvisier 1994, 140). Throughout the literature the term *citadel* is frequently being used without any military connotations. For convenient reasons the term 'citadel' will be used as well without assuming any military functions.

Chapter 4: Fortifications of the Indus

This chapter will examine the fortifications of eight Indus valley sites which are Banawali, Harappa, Kalibangan, Mohenjo-daro, Dholavira, Kuntasi, Lothal and Surkotada. The structural history of the fortifications will be described together with the possible presence of primary and secondary features.

4.1 Banawali

The site Banawali is located on the northern bank of a river known as the Hakra-Ban, Rangoi, Nadi or Nali. Like other Harappan sites, Banawali is divided into two main areas which are the citadel and the lower town. The citadel is located on higher ground, has an apsidal form and is surrounded by walls on the eastern, northern and western side. On the south it might have shared a wall with the outer town (see figure 9).

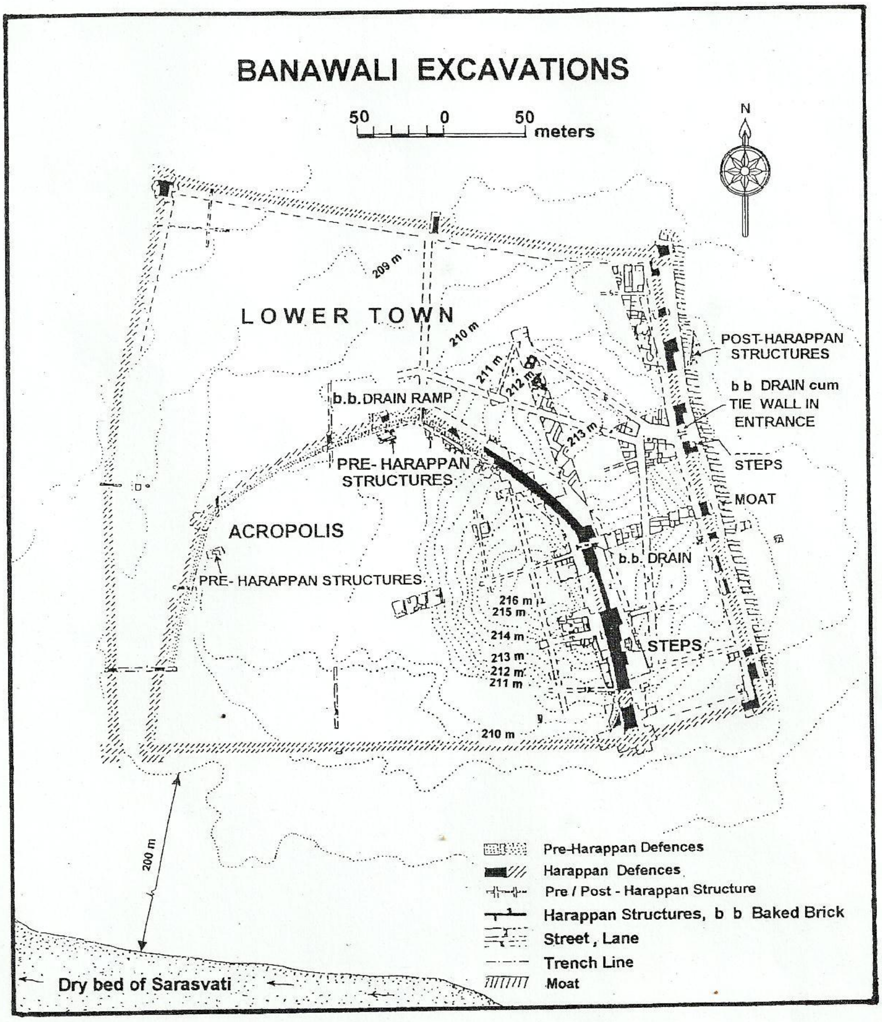


Figure 9: Site plan of Banawali (after Bisht 1998-99, 33).

Table 3. Periodization of Banawali (After Indian Archaeological Review 1987-1988).

Period	Phase
I	Pre-Harappan
IA	Pre-defense phase
IB	Defense phase
IC	Proto-Harappan (transitional phase)
II	Mature Harappan
III	Post-Harappan

The Banawali settlement was occupied during three major phases (see table 3). Unfortunately, no absolute chronology exists, but the Mature phase can be dated between 2500 and 1800 (Bisht 1997, in Elcov 2008, 98).

The Pre-Harappan phase has little structural activity. In period IA, the settlement was laid out upon the mound without fortifications and in period IB walls were built around the settlement. Period IC (transitional phase) sees drastic changes in planning and architecture. The entire settlement was changed rigorously by removing all pre-existing houses en building new ones. The walls were widened almost twice as much in this period and the settlement on the mound became the citadel (Bisht 1998-99, 15-16). In period II, the mature phase, the settlement sees another set of changes. Again the houses were demolished and new ones were built, a moat was dug and the citadel became the center around which a new system of streets was developed (Bisht 1998-99, 17-18).

The citadel is located on elevated ground and has a fortification wall ranging in width from 5.40 to 7.50 m. The inner fortification wall shows two gaps, drain like passages. It is accompanied with an extensive square like bastion projecting towards the lower town. Unfortunately, no more details are given of the bastion at this time. The other passage can be found further north along the citadel wall. Here too, there are indications for the presence of a bastion. Another bastion is projected towards the outer town as well and is located just north of the fortification turn. The passages, as suggested by Bisht, could be meant for restricted pedestrian traffic but they also certainly drained storm-water (Bisht 1984, 91-93). At Banawali, one platform was found. This platform, located in the citadel, is interpreted as being a former stairwell for getting across the wall to the lower town (Indian Archaeological Review 1987-88, 25).

The outer fortification could be established as a sort of trapezoidal form on the basis of three recovered corners (north-west, north-east, south-east). All the walls at Banawali were made of molded bricks set in mud mortar and plastered with mud mortar mixed with husk and dung. Only remnants of the eastern city wall have been recovered. A gateway in the eastern wall provided access to the settlement. This gateway is flanked by

bastions and a frontal moat of which has to be determined how one could get across. Bisht (1998-99, 20) suggested a wooden bridge might have been present to cross the moat.

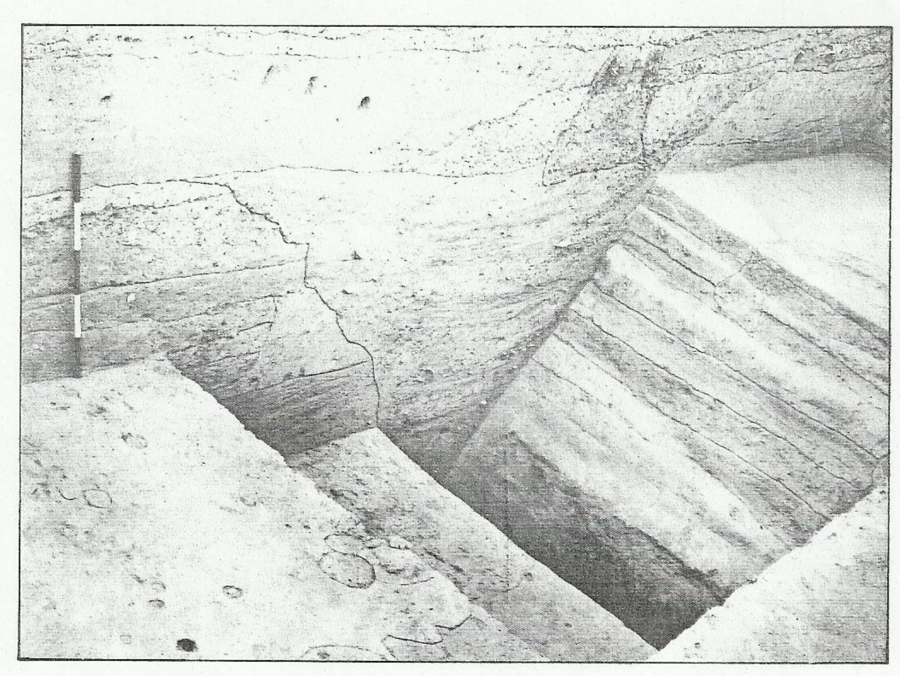


Figure 10. Banawali: section across the moat

The moat ran across the entire eastern wall where it took, at the north eastern corner, a turn to the west following the northern wall. The west side of the town also had a moat up to a certain point. As for the southern side of the wall, no attempts have been made to look for remains/indications for a moat. It is important to note that between the moat and the defense walls there was a road, most probably to safeguard the walls against water erosion. In military terms this is called an escarp (see glossary). The moat is V-shaped and measures a maximum of 6.50 meters wide and a depth of 3.60 meters (see figure 10). Bisht, the excavator of the site recognizes its military function and states that "t*he moat may have formed a formidable first line of defense in the wake of an attack*" (Bisht 1998-99, 18).

Unfortunately, not the entire fortification system has been excavated. The site plan (figure 9) is for the most part conjectured with only a big part of the eastern side of the settlement uncovered. The excavations though have still recovered interesting structures. The flanked gateway in the eastern wall, bastions in the citadel wall and the presence of a moat around the settlement seem to point to a military function of the fortifications.

4.2 Harappa

Harappa is a large site and its size is estimated around 150 ha which would have at one time had an estimated population of 20.000 people (Possehl 2002b, 66). Harappa is the most extensively excavated site of the Indus valley and consists of four mounds: mound AB, mound, E, mound ET and mound F (see figure 11).

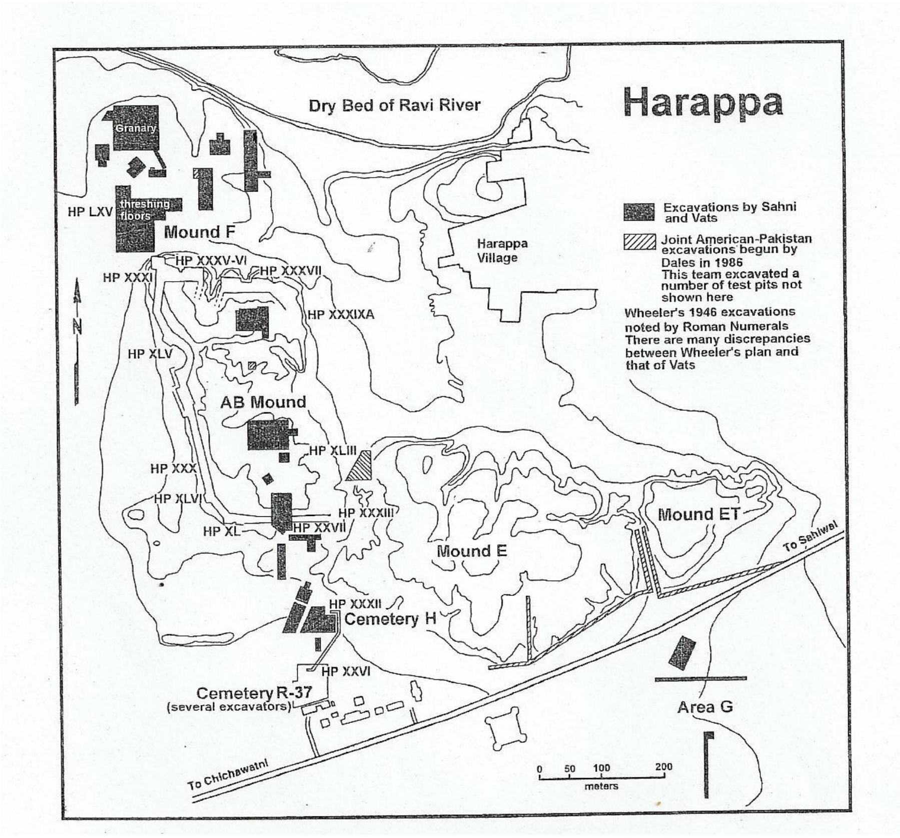


Figure 11: Harappa; Site plan (after Possehl 2002b, p. 30).

Excavations began in the early 1920s with excavator M.S. Vats who excavated from 1920 to 1934 and the reports of his excavations yielded much information about the Indus culture and its objects but the reports do not mention any fortifications (Vats 1940). Vats (1940) distinguished three periods: the early, the intermediate and the late. However, this chronology has been revised and modified by Kenoyer and Meadow (2000) which now is the most recent and accepted chronology and is based upon five periods (see table 4).

Table 4. Periodization Harappa (after Meadow *et al* 1999, 2)

Period	**Name**	**Dates**
1	Early Harappan (Kot-Diji)	3300 - 2800 BC
2	Early Harappan (Transitional phase)	2800 - 2600 BC
3A	Mature Harappan	2600 - 2450 BC
3B	Mature Harappan	2450 - 2200 BC
3C	Mature Harappan	2200 - 1900 BC
4	Mature/Late Harappan (Transitional phase)	1900 - 1800 BC
5	Late Harappan	1800 - 1300 BC

In 1946, R.E.M. Wheeler set out to teach new students about excavation techniques, and the site Harappa was selected for this training. Wheeler was the first excavator to take into account historical and cultural questions such as fortifications. Concerning the latter, Wheeler had two objectives: to establish the existence of a defensive system and to ascertain the relationship with the geological stratification with the site if any system was found (Wheeler 1947, 64).

Mound AB

Wheeler identified three major periods of construction which he placed in the Mature phase. However, he did not specifically correlate his periods with the sequence of Vats (1940) and therefore it is difficult to place the structures in a more specific time period other than the mature phase.

Wheeler found that mound AB (see figure 12) was heavily fortified and marked the arrival of the Mature Harappa phase. The main wall was built integral together with a rampart or bund (see appendix II figure I) and had a basal width of 40 feet (12.2 m) and a height of 35 feet (10.6 m). Rectangular towers and salients were present and took care of extra reinforcements of the walls. Furthermore, evidence of a platform was found which was interpreted to carry the internal buildings of the citadel (Wheeler 1947, 64-65).

The first period at the north-western corner showed that it was elaborately fortified and had a corner tower. The northeast corner showed a possible tower which rose at the time of excavation not less than 35 feet (10.6 m) above the surrounding plain. The eastern side of the citadel showed a straight alignment with no evidence of salients or towers. The southeastern corner showed an angle of a salient. The southwest corner had two towers or salients. One of them was badly deteriorated, the other measured 43 feet (13.1 m) broad. Also in the south west corner, north from the two towers, stood another bastion of 53 feet (16.2 m) broad (Wheeler 1947, 66-70).

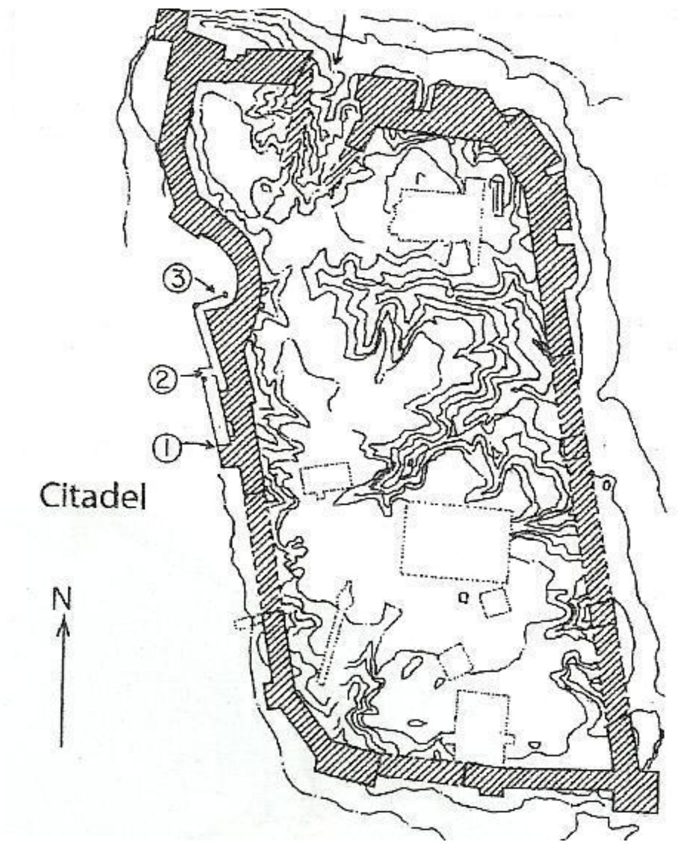


Figure 12. Harappa: fortifications at citadel mound (after Elcov 2008, 8).

The western side of the walled citadel has three gateways (see figure 13). Entrance 1 was, compared to 2 and 3, a simple entrance. It consisted of a narrow passage which could be accessed directly from the outside. Entrance 2 consisted of featureless parallel walls. A possible guardroom flanks the southern side of entrance 2, but its remains are ill-preserved. In a later phase, a burnt layer and burnt bricks suggested a violent destruction and was blocked partially which resulted in a reduced entrance in the middle.

Entrance 3 is a more complex entrance (see appendix II figures II and III). Its eastern side is formed by the main defensive wall and its western by a massive pylon. From the pylon runs the outer wall of a long passageway which ultimately joins the passage from entrance 2. At the corner it was reinforced with a projecting rectangular guardroom. In a subsequent phase, entrance C was completely blocked by a rougher kind of material of which Wheeler suggested that Harappa was on its decline and defensive (Wheeler 1947, 70-74).

Unfortunately, it is not possible to give better time brackets for the structural history of mound AB. It is important to note that it cannot be deduced from Wheeler reports whether the fortifications represents a single phase of construction or if they were the result of multiple construction phases (Kenoyer 1991, 35).

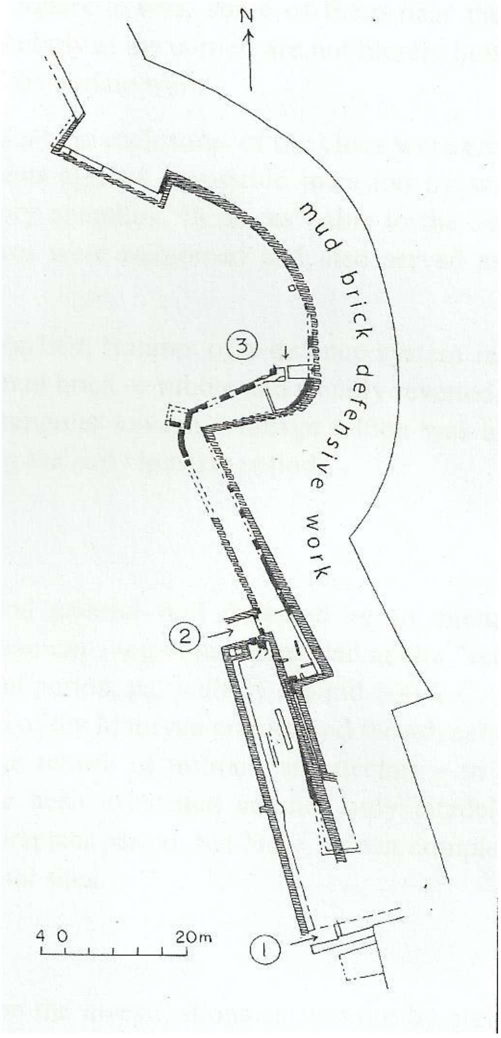


Figure 13. Harappan gateways 1, 2 and 3 at mound AB (after Elcov 2008, 9).

Mound E

From 1986 to 1990 excavations began again with Dales & Kenoyer who also excavated some seasons in the nineties. Since excavations techniques and documentation of the data has improved, a better chronological framework exists than for mound AB.

In period II massive mud-brick revetments or retaining walls appear on the northwestern periphery of the mound. These walls measures 2 meters wide (Kenoyer 1991, 44). According to Kenoyer (1991, 44) these walls could belong to a later phase of period II which saw a gradual transition into period III. The northern wall was only partially excavated (15 m in length) but it seemed no freestanding wall and measured 2.5 meters. On the same mound (E) trenches were also opened at the southern side which revealed a massive mud-brick wall extending in an arc for over 73 meter. The walls range from 5.4 to 6.4 meter and up to 8.5 meter near the entrance. In one section a later addition

could be seen, expanding the width of the wall to 11.8 meter which might have been for a bastion or a tower (Meadow 1991, 256). A massive mud-brick bastion was uncovered in the southwestern corner of Mound E at which point the city wall turned north (see appendix II figure IV).

The original southern wall of mound E can be dated, on the basis of ceramics, to the beginning of period 3A (Meadow and Kenoyer 1994, 453). Due to a period of erosion and inadequate maintenance the wall was repaired along its entire length in period 3B and repaired in some sections during period 3C (Meadow and Kenoyer 1994, 466).

Mound ET

Trenches opened at the southern side of mound ET revealed a perimeter wall which was constructed some time after 2470 BC. Two or more phases of rebuilding took place after which the width of the wall measured 5.5 tot 6.5 m. (Meadow & Kenoyer 1997, 147). The southern wall takes a northern turn at the southeast corner, forming a gateway between mounds E & ET. At around 2250 BC, the gateway was connected with large baked brick pillars or towers (Meadow & Kenoyer 1997, 144).

Mound F

Excavations at mound F also revealed the presence of a mud-brick city wall. Four trenches were opened in 1997 which revealed perimeters walls which measured up to 9 meter at some points. The wall could be connected with the city wall of mound AB, in a way that was done with mound E and ET, but future excavations should determine this as well if the wall completely encircles mound F (Meadow et al 1998, 12-13). Due to the little excavation that took place at mound F no chronology could be given.

Summary

All the four mounds at Harappa were at some point fortified during the mature phase. Most information of the fortifications comes from the citadel mound which has multiple primary military features as well as secondary features. The other three mounds provide some interesting data as well. The gateway between mound E and ET is an interesting feature and the thickness of the walls of mound F (as well as mound AB) suggest possibly more than practical reasons alone and might point to symbolic reasons.

4.3 Kalibangan

The site Kalibangan is located 310 km north-west of Delhi close to the now-dry bed of the river Ghaggar in the district of Rajasthan (Thapar 1973b, 85). It is strategically located at the confluence of the Sarasvati and Drishadvati Rivers. At present, the area around the settlement is dry and consists of sand-dunes. However, during its mature phase, the river flowed past it and the land must have been very suitable for agriculture (Lal 1981, 48).

Like the other sites mentioned before, Kalibangan was also divided into two parts: The citadel in the west and a lower town in the east. Both the citadel and the lower city were surrounded by a fortification wall in period I and II (Thapar 1973, 92). See figure 14.

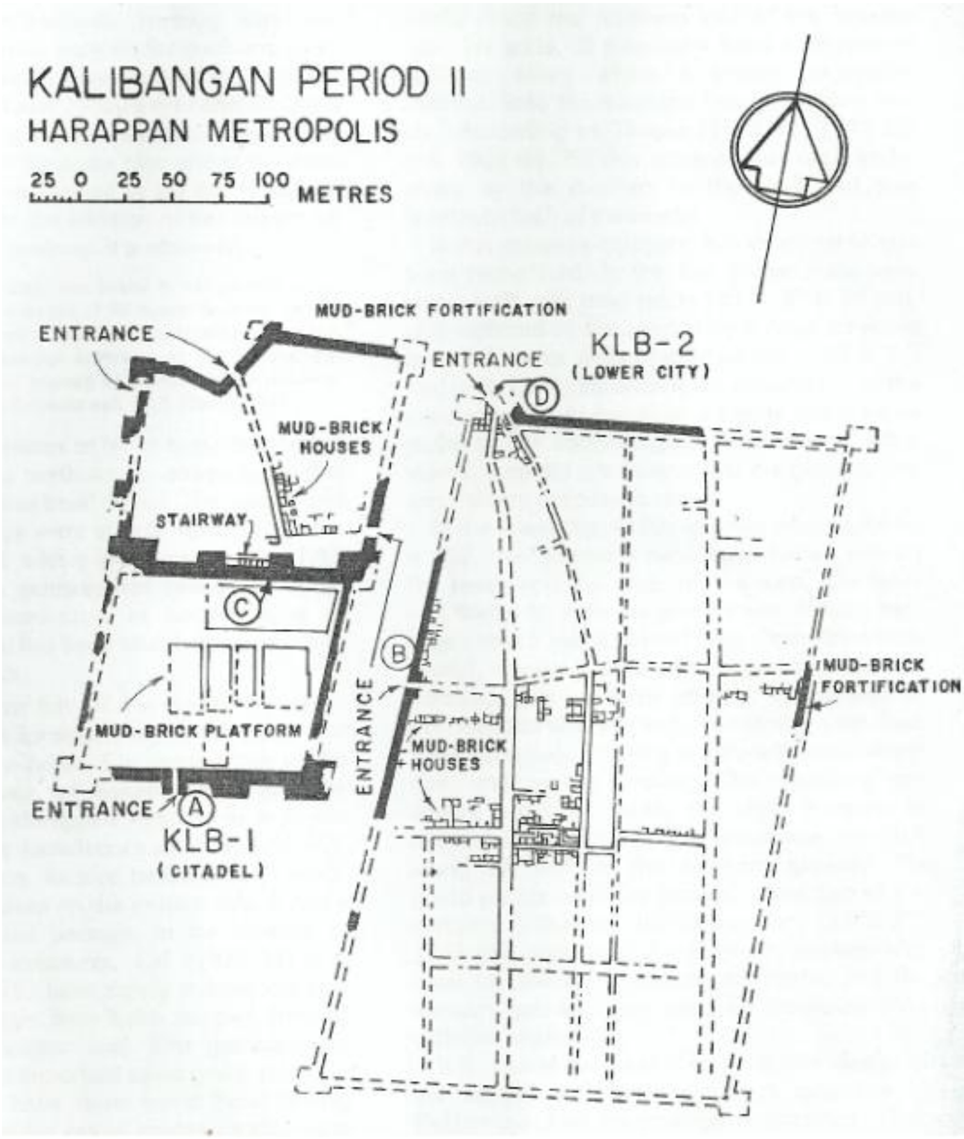


Figure 14. Site plan Kalibangan, Mature phase (after Kesarwani 1984, 66).

The site has three mounds (KLB I, KLB II and KLB III) and was excavated by Lal and Thapar from 1961 to 1969. Two periods were revealed, a pre-Harappan phase and a Mature Harappan phase (see table 5).

Table 5. Periodization Kalibangan (After Thapar 1973b).

Period	Names	Dates
I	Pre-Harappan	3000 – 2600 BC
II	Mature Harappan	2550 – 2000 BC

In period I the site consisted of one set of fortifications which were made up of 'simple' walls ranging from 2 to 4 meter thick. The second period marked the arrival of the Mature Harappa phase and saw a whole new construction phase. The Harappans at Kalibangan used the eastern wall of the phase I settlement as the new (upper part) of the western wall of the lower town. (See Appendix II figure V for a comparison between phase I and II). This reduced the width by 60 meter and created a barrier that was twice as long as it was wide. Now the fortifications system included corner bastions, salients and defended gates (Possehl 2002a, 18-19).

The citadel in the west was located on higher ground and consisted of two parts: a northern and a southern part. The northern part of the citadel consisted of residential buildings. This part of the citadel was also fortified with salients and bastions found on the north and west side. The northern part could be accessed from three entrances, each controlled by a bastion (Thapar 1973, 94- 97).

In the southern part of the citadel, a series of separated mud-brick platforms were revealed. On top of these platforms clay-lined pits were found which are interpreted as fire-altars. Ceremonial bathing is also suggested based on finds of bath pavements and drains and a rectangular pit with animal bones in it was perceived as animal sacrifices. This all, plus the fact that no residential houses were found in the southern part of he citadel has led Lal (1981, 49) to perceive this part of the citadel as a religious area. It is interesting to note that the southern part of the citadel was more heavily fortified with corner-bastions and also with salients. (See appendix II figure VI for the salient).

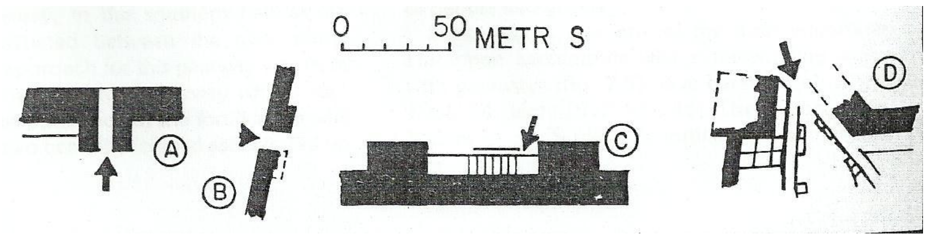


Figure 15. Kalibangan: detail of gate entrances (after Kesarwani 1984, 66).

Entrance A (see figure 15), in the southern part of the citadel, is characteristic of a defended gate. Thapar (1973, 96) and Lal (1981, 50) interpreter the structures as salients while Kesarwani (1984, 67) speaks of corner towers. The exact interpretation of the structures is difficult to ascertain but it seems that the additional structures at the both sides of the entrance made it more defensible. Entrance C, also in the citadel area, is located between two salients. A nearby pathway and the approach through a stairway has led Lal (1977) to suggest this entrance was a used for ceremonial reasons (Lal 1977, 10). This however does not mean that the entrance could be guarded and that the salients could have a military function.

The lower city was also enclosed by a fortification wall and was made of mud-bricks. The width of the wall ranged between 3.5 meter to 4 meter (Rao 1991, 89). The western entrance (B) was supervised by a guard (Thapar 1973, 98). The entrance (D) in the northwest of the lower town provided access to the river-front and was well flanked with bastions. No traces of other entrances were found, but this is probably due to the fact the southern wall is completely eroded and only a part of the eastern wall survived (Lal 1981, 51).

Summary

At the start of period II, the people of Kalibangan constructed a new fortifications system which showed a more military character than its previous phase. Now entrances were flaked with salients or bastions and bastions were present the citadel wall as well. The citadel mound at Kalibangan seems to be better military equipped than the lower town, mainly because it appears to have thicker walls and more and bigger bastions. Both mounds have defended gates and these military features indicate a probable military function of the fortifications.

4.4 Mohenjo-daro

The site Mohenjo-daro lies in Larkana District of Sind (Pakistan) on the right bank of the river Indus. Mohenjo-daro was divided into two areas: A citadel which was located on elevated ground and a lower town. A wide zone of 150 m., which could be a channel according to Ratnagar (1991, 42), divided these areas (see figure 16).

The chronology of Mohenjo-daro has been problematic from the start (see 1.6). Since then Wheeler (1962), A.H. Dani (in Alcock 1986) and Alcock (1986) all presented chronologies of Mohenjo-daro. I will adopt the most recent chronology of Jansen (1991, 165) which is based on a large amount of data. Jansen proposed five periods with a subdivision of period IIB (see table 6).

Table 6. Periodization of Mohenjo-daro (After Jansen 1991, 165).

Period	**Name**
I	Pre-platform period
IIA	Platform period
IIB	Urban period
IIB.1	Mature Urban phase
IIB.2	Late Urban phase
IIC	Post-urban Period
III	Kushan period

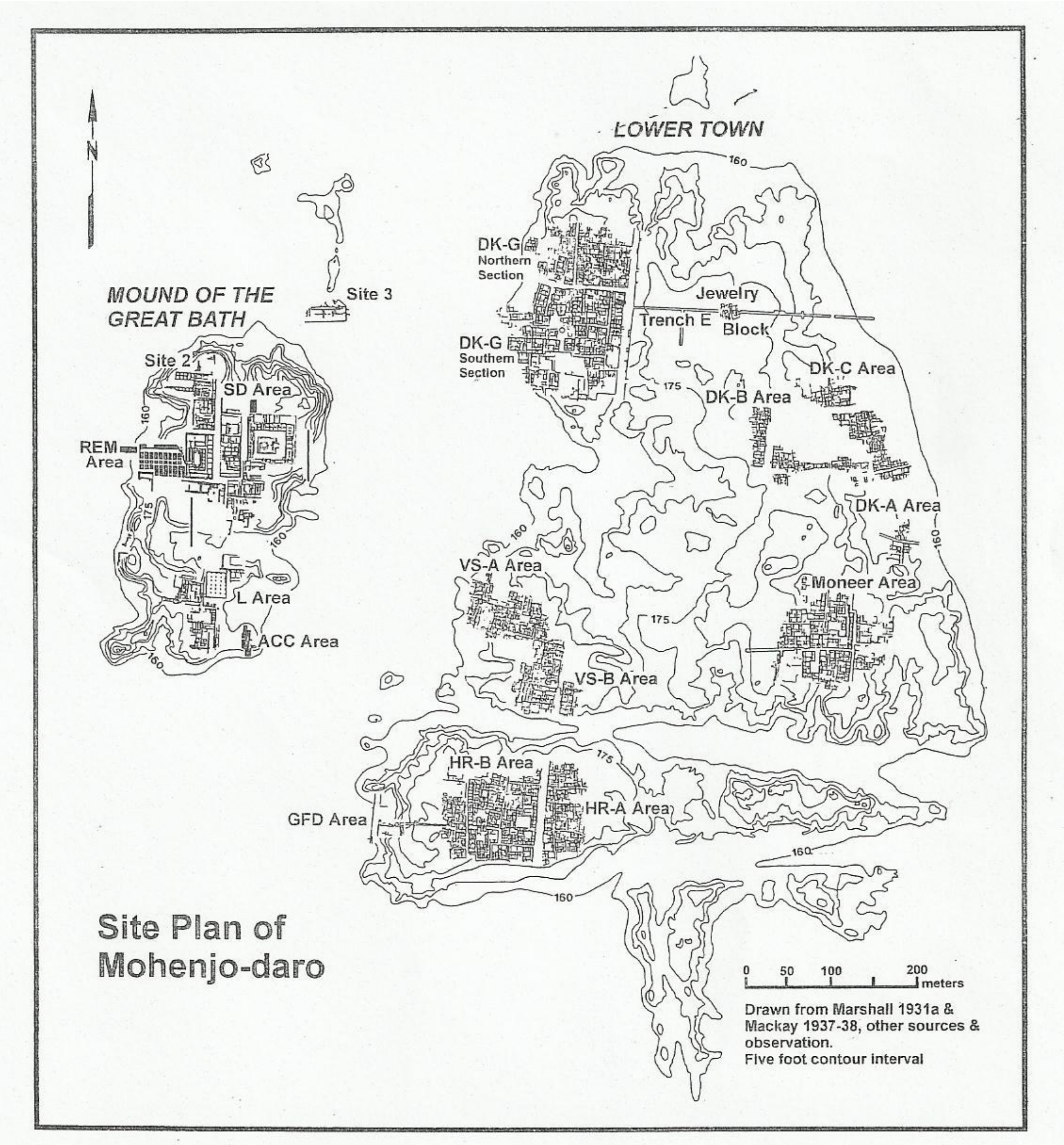


Figure 16. Site plan of Mohenjo-daro (after Possehl 2002, 24).

At Mohenjo-daro, a total of 15 seasons of excavations took place. The first excavations took place in the 1920's when Marshall led a series of campaigns. Marshall (1931, 125) discovered an immense platform over the mound of the great bath on which Mohenjo-daro was settled. Evidence of huge platforms was found in the lower town as well and Mackay (1938, 42) has noted the presence of a very thick mud-brick platform under the DK area.

Marshall found no firm evidence of any walling or fortifications. However, this was not ultimate proof since brick robbers could have taken away a lot of bricks as was done to other buildings (Marshall 1931, 282).

Of particular interest, is site no. 3. Site no. 3 is a fortress-like feature north of the mound of the great bath (see figure 16). The structure has triangular-shaped projections and 14 feet (4.3 m) thick outer wall and was constructed on the possible city wall which was very long at some points 30 feet (9.1 m). However due to financial issues this interesting feature was not further explored (Mackay 1938: 4-5).

Just as at Harappa, it was Mortimer Wheeler again who, in 1950, shed more light on the citadel and its fortifications. His goal, besides training the staff, was to reach earlier levels than before and test the hypothesis that Mohenjo-daro had a fortified citadel. However, his findings were not published in detail.

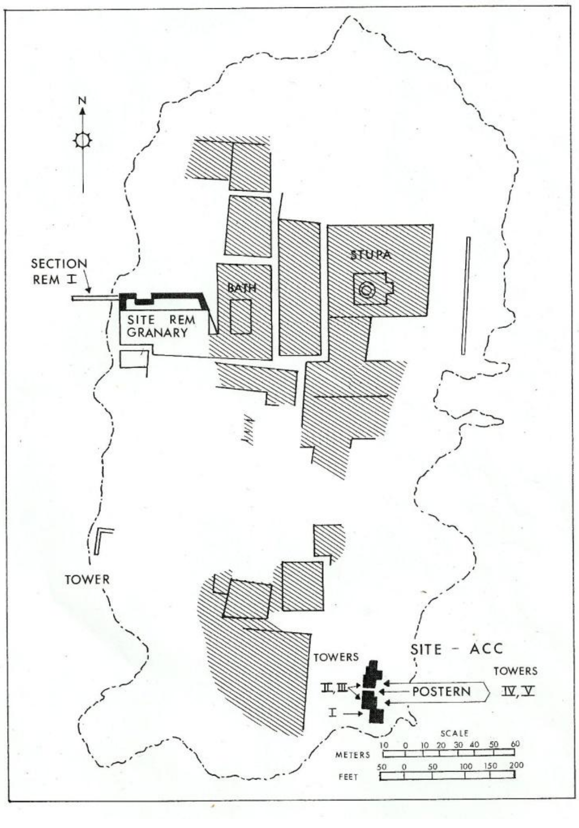


Figure 17. Mohenjo-daro: mound AB (after Dales and Kenoyer 1986, 497).

Wheeler (1947, 64) believed in the presence of a continuous mud-brick periphery at the mound of the great bath. At twenty-one points a cursory examination showed mud-brick traces by scraping the surface. In the south eastern corner of the citadel (ACC area), Wheeler furthermore found a system of solid burnt-brick towers which formed part of a complex (see figure 17). There also seemed to be two towers flanking a postern gate, which was later blocked by a platform with a parapet. Foundations beneath the surface immediately east of these towers may have represented a small fort or stronghold. A baked brick tower or salient was found in the west of citadel presumably protecting a small postern just north of this tower. Wheeler suggested that the citadel had a 'defensible character' (Wheeler 1953, 28/29). However, the alleged military function of the tower in the southwestern part is debated by Dales and Kenoyer and the small postern gate could also be interpreted as stairwell. Nevertheless they claim that the towers in the south eastern part of the citadel do have a military character (Dales & Kenoyer 1986, 500).

Other mounds

Studies undertaken in the nineties of the previous century show that, just like Harappa, that each major mound was surrounded by enormous mud-brick walls with gateways. Moreover, corings along the perimeter of the HR area revealed the possible presence of mud-brick walls which might be even more imposing than those at Harappa (Kenoyer 1998, 56). Furthermore, it was established that the entire east area of the HR area stood on a massive mud-brick platform which was built at the start of the mature phase (Elcov 2008, 131).

Summary

Although there is not much evidence concerning the fortifications of the mound of the great bath due to brick robbing, it does seem that it was completely fortified. However, it is difficult to assess the military character of the site since only some features were uncovered. The presence of fortifications at the other mounds is similar to that of Harappa, but here also no definitive conclusion can be given. Due to the scarcity of data and absence of a good chronological framework, a table with the structural history of the site is omitted in the appendix.

4.5 Dholavira:

Dholavira is located in the Rann of Kutch and has a strategic position for controlling shipping through the Rann, the delta of the Indus and the Ghaggar-Hakra rivers (Kenoyer 1998, 53). Dholavira is a large site, spanning some 100 ha, and was discovered in 1967.

Since 1989, this site is almost continuously under excavation by the Archaeological Survey of India (ASI). The site has a long sequence of occupation that seems to begin with a transition phase around 2600 BC, extending well into Late Harappan 15th century BC (see table 7).

Table 7. Periodization Dholavira (after Possehl 2002b, 67).

Stage	Name	Dates
I	Early-Mature Harappan Transition A	2650 – 2550 BC
II	Early Mature Harappan Transition B	2550 – 2500 BC
III	Mature Harappan A	2500 – 2200 BC
IV	Mature Harappan B	2200 – 2000 BC
V	Mature Harappan C	2000 – 1900 BC
VI	Post-Urban A	1850 – 1750 BC
VII	Post-Urban B	1650 – 1450 BC

The full grown town consisted of a 'castle' with bailey, a middle town and a lower town, two stadia and a series of reservoirs all set within enormous fortifications walls. (See figure 18 and appendix II figure VII for a reconstruction).

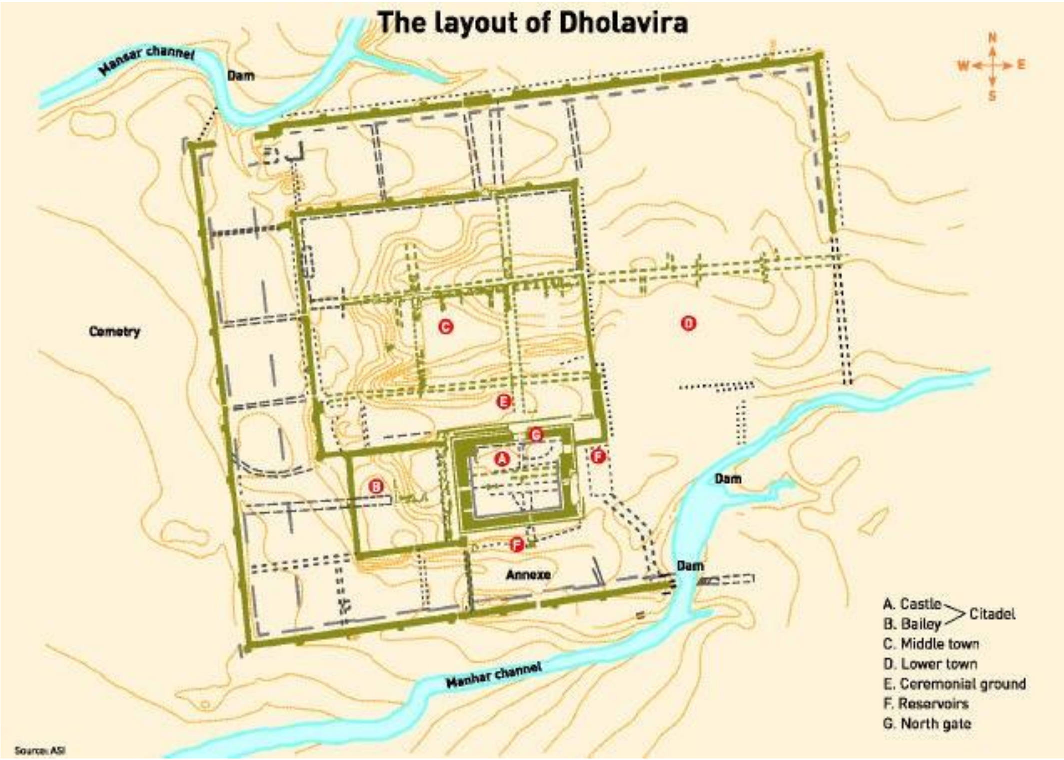


Figure 18: Site plan Dholavira (http://archaeologynewsnetwork.blogspot.com/2010/06/rise-and-fall-of-harappan-city.html).

The first settlement, located near the citadel, in its earliest stage (2650 -2550 BC) was surrounded by a very thick fortification wall of 11.1 meters at its base. The height of these walls measured around 4 meter (Indian Archaeological Review 1991-92, 26). Stage II, which corresponds to the period 2550- 2500 BC, sees the widening and strengthening of the fortification wall together with an expansion of the settlement. In stage III (2500 BC), the settlement adopted another set of fortifications and grew into a large town (Possehl 2002b, 68-69). The existing walled settlement was divided into two divisions, namely the 'Castle' and the Bailey. The Middle town was founded with its own fortifications and had bastions, corner towers and gateways. Furthermore the entire settlement was now walled with an outer fortification wall which was reinforced with bastions and towers (Indian Archaeological Review 1991-92, 28). In short, period III was characterized by major building activity which gave rise to its present form.

A truly majestic piece of architecture built in this period is the so-called 'castle'. This structure measured a height of 16 meter and was surrounded by double ramparts on all 4 sides (IAR 1984-1985, 14). See figure 19 and cover for a computer animated reconstruction of the 'castle'.



Figure 19. View on the north gate of the 'castle' with rampart in front

http://www.asi.nic.in/images/exec_dholavira/pages/009.html

The layout of this site is very different from other Indus settlements as can been seen from figure 18. The outer wall has large square bastions, two major gateways and is constructed entirely of mud-brick. Within this site lies another area, the so-called middle

town. This area is fortified and has four gateways, located in the center of each wall. The eastern gate is flanked by two bastions which originally had two flanking chambers. An acropolis (the castle) is elevated 13 feet (4 m) above the lower town and has also four gateways in the center of each of the four walls (Kenoyer 1998, 53).

What is very striking in regard of this thesis is the presence of bastions at regular intervals. The bastions occur at every 50 to 52 meter and can be found at every of the four outer walls. There are (excluding the corner bastions) 11 bastions at the northern wall and 9 along the western wall. Bastions are present at the eastern and southern wall as well but the south-eastern quarter is not traceable (Bisht 1998-99, 24).

Dholavira has fourteen gates of which some are very elaborate and some very simple. The castle has five gates which clearly attest to a defensive character. It has two gates in the eastern arm en the other three in the remaining sides. One of the East gates consists of a passageway with an elevated chamber on the south. (See appendix II figures VIII and IX). It is suggested that huge doors must have been present on both ends. The other east gate remains undecided, no evidence could be found for descending to the ground level on the east. The southern gateway has a concealed passageway while the western gate has guardroom on its southern side. Further guardrooms can be found in the north bailey gate and the east gate of the stadium.

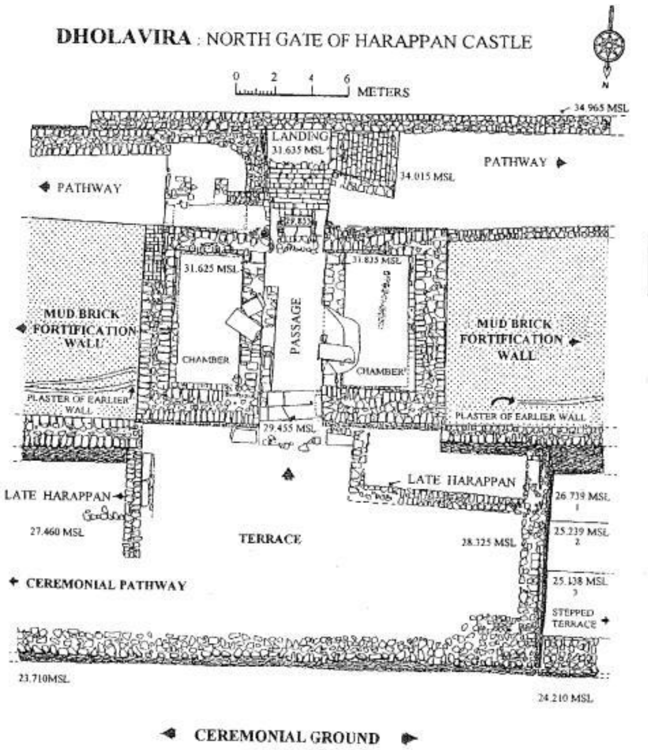


Figure 20: Plan of North gate Harappan Castle, Dholavira (after Bisht 1998-99, 36).

The north gate of the castle is an elaborate constructed gate. (See figure 20 and appendix II figures X and XI). The gate is located in the northern 'castle' wall and leads to the ceremonial pathway. It consisted of a passageway and has elevated chambers on both sides (Bisht 1998-99, 30-31). It reminds of a flanked gate entrance (see figure 7, chapter 3.1) and has the characteristics of a military defensive entrance. The castle and the bailey have three parallel stone walls with infilling of mud which make them a remarkable strong construction (Allchin & Allchin 1997, 165).

No large scale constructions took place in stage IV and V and the latter stage saw a general decline in the maintenance of the city after which Dholavira was abandoned for a short time (Indian Archaeological Review 1991-92, 30).

Summary

Dholavira is another fine example of the Harappans great technical achievements. The fortification system of this site shows numerous primary features such as bastions and gateways. It is clear that walls were not primarily erected for the purpose of water protection. Whether the features were used as military function will be discussed, but the thick walls of the rampart and the castle suggest perhaps more a practical function alone.

4.6 Kuntasi

Kuntasi has been excavated for three seasons by M.K. Dhavalikar from 1987 to 1990 and is located on the border of Kutch and Suarashtra some 4 km away from the sea. In the ancient past this would be ca 1-2 km and it has been suggested that Kuntasi served perhaps as a port (Chitalwala 1996, 1-3).

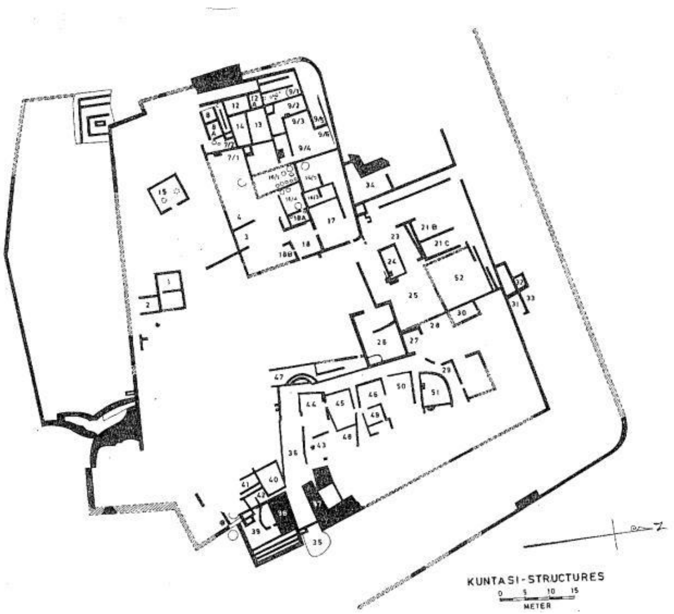


Figure 21: Site plan of Kuntasi (after Chitalwala 1990, 45).

The settlement of Kuntasi was laid out around a centre which surrounded by buildings on all the four sides (see figure 20). Three clear structural phases could be identified from the excavation by Chitalwala and his team (see table 8).

Table 8. Periodization of Kuntasi (after Chitalwala, 44)

Period	**Phase**	**Dates**
1: Mature Harappan	A	2400 - 2200 BC
	B	2200 - 1900 BC
2: Late Harappan	C	1900 - 1700 BC

The earliest building activity took place in phase A when Harappans came in search of raw materials such as carnelian and ivory. The excavations were aimed at excavating structures from phase B, so only a couple of structures from phase A were excavated. These can be found on the western side of the settlement close to the river.

Phase B, starting from around 2200 BC, was the most extensive construction phase. The site was protected with a double fortification wall and had impressive features such as a watch tower in the south-western corner and an elaborate entrance gateway on the east which was provided with a bastion (Chitalwala 1996, 44).

The outer wall has an average width of 1.10 m. whereas the average width of the inner wall measures 1.30 m. The inner wall and outer wall are constructed with large boulders set in mud masonry. The distance between the two walls measures a maximum of 25 meter and a minimum of 15 meter. (*ibid.,* 49-52).

The gateway on the east was established as the main entrance. The entrance was flanked by bastions as both sides and the chamber south of the southern bastion may have been a guard room (see figure 21).

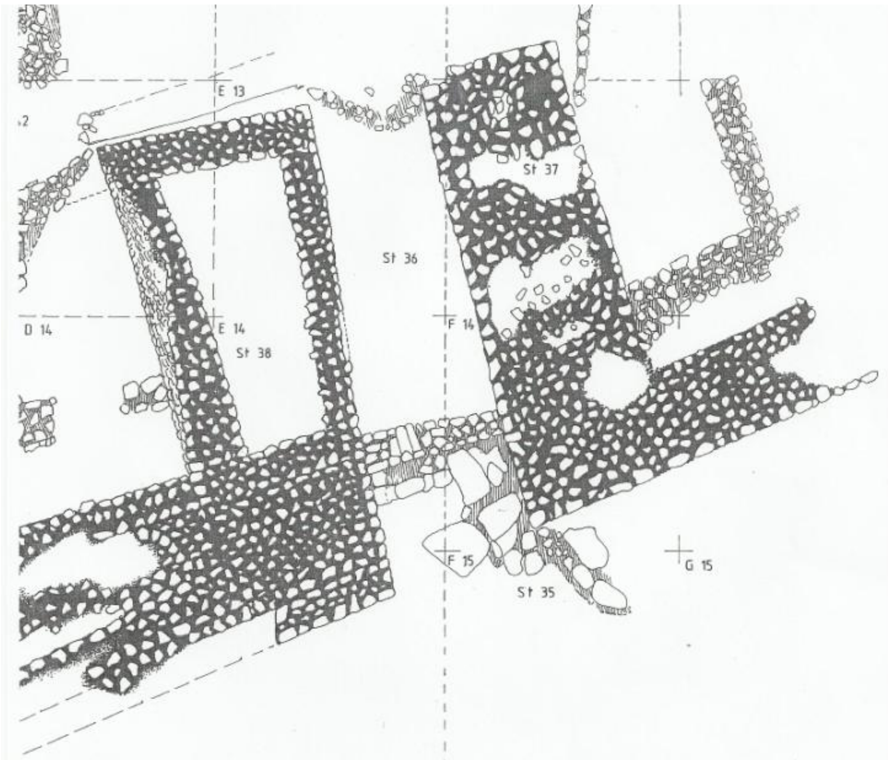


Figure 22. East entrance of Kuntasi with possible guard room (after Chitalwala 1996).

In the southwest corner of the settlement, a structure is located which is interpreted as a watchtower (see Appendix II figure XII). Since its location is very close to the river Chitalwala (1996, 52) suggests that this for keeping an eye on the arrival of boats which seems a reasonable explanation.

Kuntasi does not seem to be following the same layout as seen at other Harappan sites. The site has double fortification walls which are relatively thin and not much primary nor secondary military features have been found. Compared with the other described fortifications, the function of walls might not point to a military function or perhaps to a less military function.

4.7 Lothal

The site Lothal is a single-mound settlement located near the head of the Gulf of Cambay in Gujarat. Lothal was settled between the Bhogava and Sabaramti rivers which often inundated its banks. Moreover, in ancient times the site of Lothal was not more than 5 km removed from the sea suggesting that the site functioned as a port (Rao 1973, 50).

Lothal (see figure 22) was excavated from season 1954-1955 to 1959-1960 and from 1961-1962 to 1962-1963 by S.R. Rao of the Archaeological Survey of India (ASI). The cultural sequence of Lothal can be summarized as followed:

Table 9. Periodization Lothal (after Rao 1979)

Period	**Phase**	**Dates**
A: Mature Harappan	I	2450 - 2350 BC
	II	2350 - 2200 BC
	III	2200 - 2000 BC
	IV	2000 - 1900 BC
B: Late Harappan	V	1900 - 1600 BC

The site measured 300 meter from north to south and 400 meter from east to west. It has fortifications walls of almost 13 meter thick made of mud-brick and supposedly this was to protect the site against floods. The excavations furthermore revealed an acropolis, a warehouse and brick lined enclosure which was interpreted as a dock into which boats could moor (Rao 1973, 61). However, the function of this structure is debated and opinions vary (See Leshnik 1968; Possehl 1976).

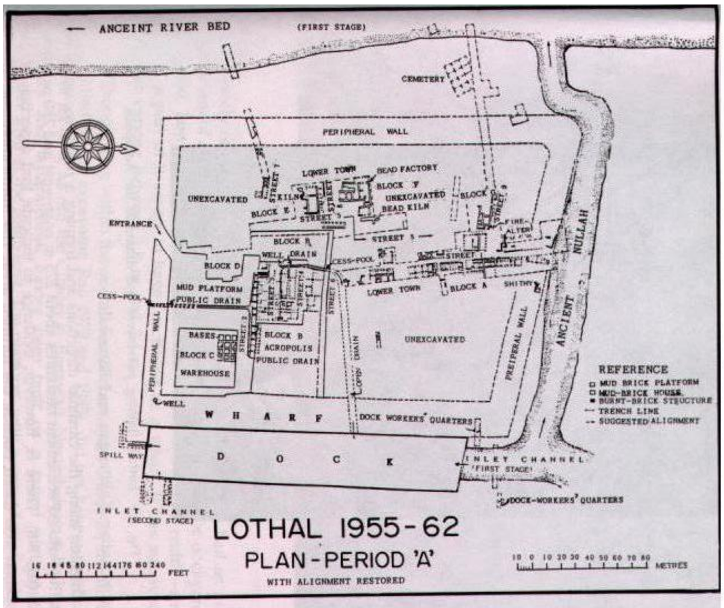


Figure 23. Site plan of Lothal (after Rao 1979, Plate XXXVIII).

In phase I a mud-brick peripheral wall was built to protect the village. The wall measured 52 ft. (15.8) wide at the base and 42 ft. (12.8) at the top. A flood ended phase I and in phase II the damaged peripheral mud wall was strengthened and enlarged with mud-bricks on the southern, eastern and western sides while baked bricks were used for the northern section (Rao 1979, 29). The houses as well as the citadel were raised on artificial platforms of varying heights for protection against the water. The citadel, or Acropolis as Rao himself calls it, has a trapezoid shape and measures 117 meter on the east and west,

136 meter on the north and 111 meter on the south. Buttresses to strengthen the platform walls were added and gave the Acropolis a fortress like appearance according to Rao (1973, 62). Another flood destroyed phase II and in phase III, the platforms were further raised to protect the inhabitants of Lothal against flooding (Rao 1979, 31). Again, around 2000 BC, a flood of long intensity devastated the site Lothal. In period IV no further attempts were made to clean up the debris or to raise the platforms even higher as a precaution against the floods. This period was characterized by a general decadence (Rao 1979, 32-33).

Summary

The lay-out and fortification system at Lothal is different than at Harappa and Mohenjo-daro. At Lothal, no gateways or bastions have been found. No secondary military features such as tower or a rampart were recovered as well. It seems that the walls had a practical function such as a water barrier which is also suggested by it excavator S.R. Rao (1979, 135-136).

4.8 Surkotada

The site Surkotada (figure 24) is located in the district of Kutch, Gujarat. Judging from the physical features it appears that in ancient times a river flowed past the southern side of the mound. This river, of approximately 3/4 km wide is suggested by its excavator Joshi to be a major source of attraction for the settlement. Surkotada was discovered in 1964 and the first excavations took place in 1971 and 1972 by Joshi. The site of Surkotada has a cultural sequence within the Mature Harappan period, namely from around 2300 BC to around 1700 BC. This sequence can be divided in three periods: 1A, 1B and 1C (see table 10). This sequence is based mostly on ceramics (Joshi 1990, 59).

Table 10. Periodization of Surkotada (After Joshi 1990, 62-66)

Period	Dates
1A	2315 - 1940 BC
1B	1940 - 1790 BC
1C	1790 - 1660 BC

I will mainly deal with the structures of period IA, because this is the period which belongs to the Mature Harappan phase. Structures from period IB, will be treated with caution since the amount of Harappan pottery suggest a new period. However a huge deposit of ash at the end of period B has been found all over the mound which suggests the ‘big’ cultural break or transition into Late Harappan (IC).

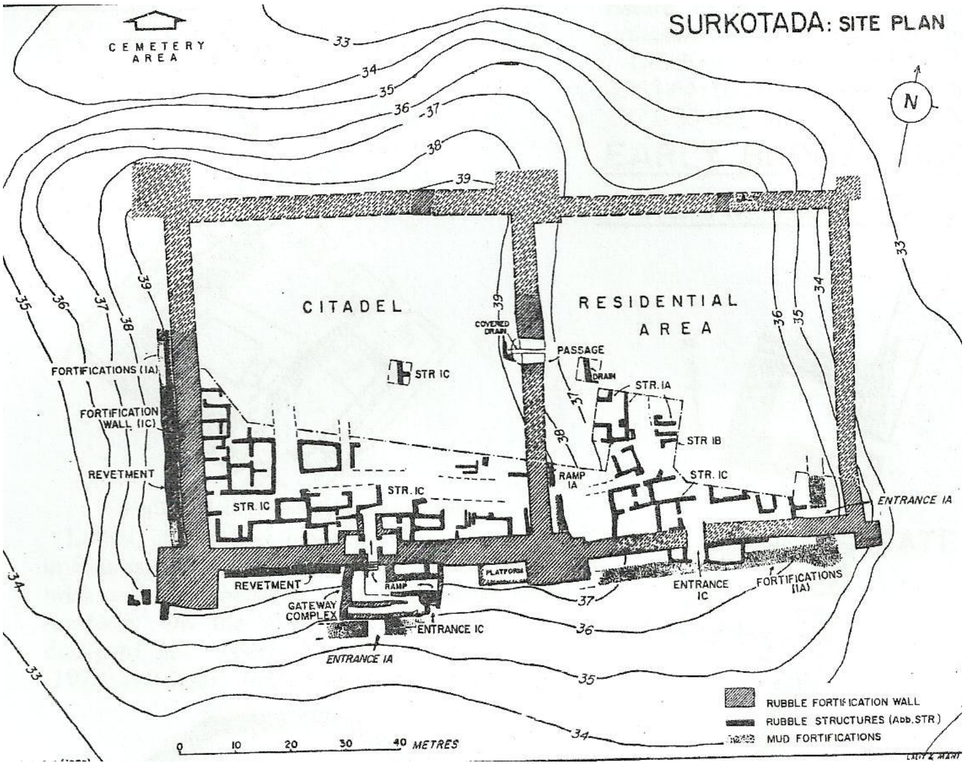


Figure 24: Surkotada: ‘citadel’ and residential area (after Kesarwani 1984, 69).

In period 1A, a fortified citadel and a residential annexe were built which were maintained throughout period IB and IC. The east, south and west side of the citadel has been excavated while the northern one was not exposed. The eastern wall of the citadel was well excavated and measured a maximum height of 4.80 meter and an average width of 7 meter. A rampart encircled Surkotada of which the core consisted of mud-bricks and mud lumps. At the south side of the citadel a defensive gate was found which included ramps, parapet walls and stairs (see figure 25, entrance 1). In period IA this gate was a simple open entrance of 1.80 meter wide, therefore the military features could be built in period IB or IC (Elcov 2008, 138).

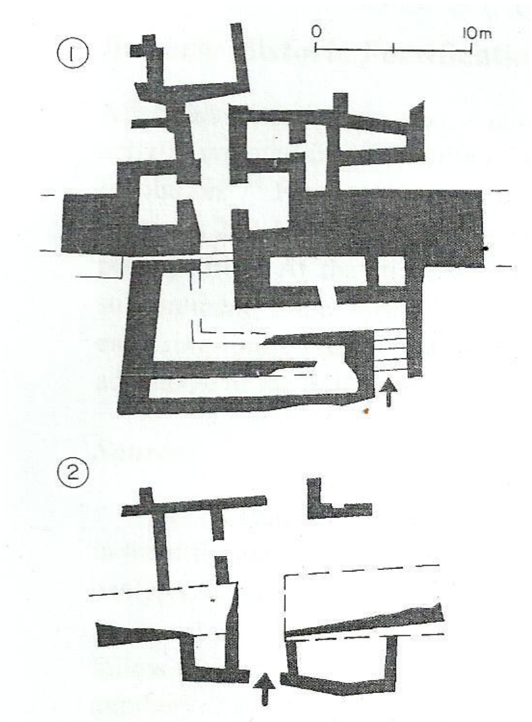


Figure 25. Surkotada: detail of gate entrances (after Deloche 2008, 9).

The southern wall at the residential area shows a gap which might be suggestive of an entrance. Bastions were not found in this wall due to the presence of other structures on top. Their existence can however not be ruled out due to analogies at other Harappan sites and bastions in period IC (Joshi 1990, 42-45). Period IB sees reinforcement in the above-mentioned structures and the bastions at the corners seem to have been constructed in period IC.

Summary

Although the bastions, suggestive of military activity, appear in a phase probably in Late Harappan, the general lay-out with thick walls and ramparts suggest some defensibility. The site is identified as a garrison complex to control the eastwards movement of the Harappans according to Joshi (1990, 18). However, it seems that this role was largely assigned due to the presence of bastions which appeared in a later phase under consideration.

4.9 Other sites

The fortifications of the eight described and examined sites are only a small selection and the Indus valley offers a lot more sites which could offer some potential important data.

The site Rakhigarhi (100 ha) in the northeast of the Indus valley has several mounds which show traces of fortifications. At one mound, called RGR 2, the presence of a gateway and bastions is attested (Nath 1997 - 1998). The site Desalpur is a small site of 130 x 100 meter located in the district of Kutch. It has traces of a fortification wall of 4 meter in width which was reinforced with corner towers and salients. No gateway has been traced as yet (Indian Archaeological Review 1963-64, 11). Apparently huge stones of 3 x 1 meter have been used in its construction (Mate 1970, 79). Sutkagen Dor was also built up with a township and a citadel. The latter has walls of 11 m wide at the base and is built of huge blocks. It southern wall had a gate which was flanked by massive rectangular towers (Mate 1970, 78). Kot diji is divided into a citadel and an outer part. The site has fortifications beginning in Pre-Harappan times and has a fortification walls with bastions at regular intervals (Khan 1965, 15-16). At Balu, another mature Indus site, there is no citadel but the perimeter wall could be as wide as 13 meter (Ratnagar 1991, 114).

These examples show moreover that the Harappans often fortified their settlements. Usually their fortifications were equipped with primary and secondary military features as well. It makes one wonder to what extent the military features were spread throughout the Indus valley.

4.10 Results

Having examined the sites and their fortifications, the following table summarizes the presence of primary features (see table 11).

Table 11. Sites and the presence of bastions, defended gates and moats.

Sites/feat.	**Bastion(s)**	**Defended gate(s)**	**Moat**
Banawali	Yes	Yes	Yes
Harappa	Yes	Yes	-
Kalibangan	Yes	Yes	-
Mohenjo-daro	-	Yes	-
Dholavira	Yes	Yes	-
Kuntasi	Yes	Yes	-
Lothal	-	-	-
Surkotada	Yes	Yes	-

With regards to primary military features it can be said that in general the people of the Indus did incorporate military structures such as bastions and gates into their fortifications but did not seem to use moats as a way of defense. Only at Lothal there are no traces of primary military structures. All the other sites have one or more military features with Banawali the only site having all the three military features (bastion, a defended gate and a moat are represented). The defended gates at Surkotada are indicative of a military function but they may perhaps belong to a transitional phase from Mature Harappa to Late Harappa.

The presence of secondary features gives a more varied picture (see table 12). Harappa and Mohenjo-daro seem to have the most secondary features. For the other sites there only a few secondary features with Lothal and Banawali having none. For Lothal it is not that strange since no primary military features were found at all. However, one would expect some secondary features at Banawali, since this is the only site which has all the three primary features. An interpretation of this will be discussed in chapter 5.2, where a summary of the sites with their distinctive military features is given in more detail. A table with the primary and secondary features combined can be found in appendix III (table VIII).

In general it can be said that the secondary military features are not overtly present. What is more striking though, is the width of some of the fortifications. The thickness of the walls in some cases seems to be far beyond the functional level in order what was needed to protect the city from a military point of view. Why then the extra labor and material? This could point to another function the fortifications were erected.

Table 12. Sites with secondary military features

Sites/feat.	**Parapet(s)**	**Postern(s)**	**Rampart(s)**	**Salient(s)**	**Tower(s)**	**Walls, thickness of**
Banawali	-	-	-	-	-	Acropolis: 5.40 - 7.40 m. Lower town: 6 m.
Harappa	-	-	Yes	Yes	Yes	Mound AB: 12.2 m. Mound F: 9 m. Mound E: 5.4 – 6.4 m. Mound ET: 5.5 – 6.5 m.
Kalibangan	-	-	-	Yes	-	Citadel: 3-7 m. Lower town: 3.5 - 4 m.
Mohenjo-daro	Yes	Yes	-	-	Yes	-
Dholavira	-	-	Yes	-	Yes	Castle: 11.1 m. at the base
Kuntasi	-	-	-	-	Yes	Inner wall: 1.30 m. Outer wall: 1.10 m.
Lothal	-	-	-	-	-	Settlement: 12.8 m.
Surkotada	Yes	-	Yes	-	-	Citadel side: 7 m.

Chapter 5: The possible function(s) of the fortifications

This chapter looks into the possible functions of the Harappan fortifications. First of all, the fortifications as water barriers will be examined. Secondly the military features, as described in chapter 4, will be discussed and thirdly ideological explanations as a function of the fortifications will be explored. After this the fortifications and their features will be arranged into three variables (location, site size and structural history) which might shed more light on Harappan society. At the end of the chapter a discussion follows which tries to assess a general function of the fortifications.

5.1 Fortifications as a flood protection

Some scholars (Raikes 1965; Dales 1966) proposed that the decline of the Mature phase of the Indus valley (around 1900 BC) was caused by a series of flooding. The main arguments are concerned with that part of the Indus civilization centered on Mohenjo-daro. According to Raikes (1965, 197-200), collected sediments from the citadel at Mohenjo-daro showed evidence of deposition under water. The nature of the sediments seemed like those from a lake. This lake and possible more lakes may have been the result of the natural forming of dams on the lower Indus river caused by tectonic activity. In this view, the continuing process of flooding was the catalyst for the decline of the Harappan civilization. Later Raikes (1984, 459-460) stated that the claim that several flood episodes were not supported by the evidence while admitting that it was not contradicted either. He did states however that flooding occurred due to tectonics of the earth which may have possible shifted the river and caused problems.

Jansen (1985, 168) criticizes the interpretation of the sediments. The sediments from the citadel area from Mohenjo-daro presented as evidence by Raikes were used for building according to granulometric analysis. Jansen (1985, 168) furthermore adds that the Indus valley is a wide, flat-bottomed valley in which the disaster described by Raikes could only be through tectonic upheavals. Flooding had to be very severe in order to inundate the upper town, making Raikes claim less likely.

Unfortunately, at Mohenjo-daro there is not much data about the fortification systems. Wheeler found traces of a fortification system but more hard data is needed to confirm this. But if there were walls, were they intended as defenses against floods? According to Raikes (1965, 202), the Harappans successfully raised their cities on massive brick platforms which would have functioned as an artificial elevation against flooding. Jansen (1994) proved by further research that this was one of the functions of the platforms (see Jansen 1994).

The use of platforms at Mohenjo-daro suggests that the inhabitants used them to protect themselves against flooding. Flooding might be a problem at Mohenjo-daro but nothing can be said about the frequency and if flooding really occurred is debated. Apart from the question if there were any floods, the platforms seemed to handle this problem which could mean that the fortifications could have another function. Unfortunately, not much of a fortification system has been recovered so that no hard conclusion can be made. The other sites in the Indus could present a clearer picture though.

Banawali

At Banawali too, an extensive platform was found. This platform, located at the citadel, is interpreted as a former stairwell for getting across the wall to the lower town (Indian Archaeological Review 1987-88, 25). There are no (other) platforms which were used to raise the structures up as with Mohenjo-daro and Harappa. Does the lack of platforms suggest that there were no problems with flooding or that the fortifications walls performed a function as water barrier? In this context, the moat could be seen as a protection against water for the foundation of the walls. However, the V-sectioned shape suggests a military character. Furthermore the excavators found no indication of threats of water so far. Finally, the fortification has military features which make it more functional from a military point of view than from a water barrier perspective (see Chapter 5.2).

Harappa

The use of platforms is also attested at Harappa. Mound AB and E show evidence of platforms and it would come as no surprise if the other mounds have platforms too. The platforms could suggest, like Mohenjo-daro, that they were used as a precaution against flooding. However, Dales (1966, 98) asserts that Harappa and other sites north of Mohenjo-daro do not seem to have suffered from significant flooding. A statement repeated 11 years later (Dales & Raikes 1977, 255). Did the platforms then suggest conventional Harappan building? Through the use of platforms, the settlement was raised and this does point to protection against the potential threat of flooding. In my opinion this leaves room for other interpretations of the fortifications.

Kalibangan

Platforms have been found in Kalibangan as well, but the platforms, located in the citadel area are convincingly linked with ritual activity (Lal 1981, 49). So if there was a threat from water, walls could be an adequate means. However, the fortifications of the citadel at Kalibangan points to another function. The thick, strong walls and the bastions suggest

more than blocking water and hint to a militaristic function. Furthermore no evidence for flooding was established according to stratigraphic levels (Elcov 2008, 119).

Dholavira

The features present in the fortifications of Dholavira suggest more than walls as a protection against water. The technical details have been described in chapter 4.4. If one were to assume that the walls at Dholavira were water barriers then the outer walls would function as a first barrier and one would think of it as a strong barrier. But why is the castle wall inside the settlement much thicker? Furthermore, why are there bastions included in the outer wall when the circumference is so big that it would require extra investment of manpower and resources? Surely, a wall without bastions would be sufficient if it was erected as a mode of protection against the water. This does not make sense from a functional 'water barrier' point of view. Moreover, Ratnagar (1991, 113) argued that flood protection was not necessary at Dholavira at all because there was no major river channel and the site is located well inland from the shores of Kadir island. It seems therefore clear that the primary function of the fortifications at Dholavira was not related to flood protection.

Kuntasi

Only three seasons of excavations took place at Kuntasi which makes it is difficult to assess the true function of the walls. An interesting aspect about Kuntasi though, is that the site has a double fortification wall. Both these walls are relatively thin compared with other Harappan sites. The outer wall shows no military features so perhaps it could have been a precaution against the rising water. However, at this point no conclusive opinion can be given about the threat of flooding at Kuntasi.

Lothal

At Lothal the situation is different. The fortification at Lothal show no military features and consists of a 'simple' thick wall and even the entrance is just a gap in the fortification wall. Since the site was rebuilt several times because of flooding, the fortifications could have been a necessary feature to block the water. Rao definitively thinks that the walls were erected mainly for water protection purposes. But here again, platforms were built to raise the structures in the settlement to protect them against flooding. Are the fortifications therefore an extra precaution or were the walls erected with another possible meaning? The devastation of the site by successive flooding does hint to major problems with water making the claim that the fortification was a protection mode against flooding very plausible.

Surkotada

The fortifications of Surkotada have distinctive military features and these do not seem to point to a function as water barrier. Moreover, Ratnagar (1991, 113) notes the remains of a substantial channel are near Surkotada, but not that close that it could have been a threat for the settlement. At Surkotada thus, the threat of flooding seemed minimal.

Summarized

It is a possibility that the walls could be used as flood barriers, it is not illogical either but I think it is never really fairly tested. The experts do not seem to agree about the use of mud-brick against water. Wheeler says that "*to defy a flood with mud brick would be like defying it with porridge*" (Wheeler 1966, 32). Dales & Kenoyer (1986, 486) responded that sun-dried bricks make an indifferent flood barrier but it was probably the best available. I think this is a weak argument; if flooding was a serious problem then serious solutions would be sought. However, Dales and Kenoyer (1986, 498) claim that embankments of mud are extensively and successfully used nowadays. Burke (2008, 58) on the other hand states that ramparts and moats functioned to keep water away from the foundation of town walls. The threat of wall collapse due to erosion were the main motivation for their use in Mesopotamia suggesting that water could have a damaging impact on walls.

I do not think that Harappan fortifications were primarily built as a way to protect themselves against flooding. The Harappans were a riverine people and practiced floodwater farming. This was a deliberate choice and I think the Harappans were well aware of possible dangers (although a disaster is always unpredictable). At some Harappan sites the platforms may have been built to raise the structures to a higher level in order to protect them against water. It therefore seems likely that the fortifications could have another meaning. On the other hand, at other sites the platforms seem to indicate another function which again could mean that the fortifications could be used as a water barrier. However, my main argument against the Harappan fortifications being flood barriers is the presence of military features. Why would one build bastions, towers and entrances with guardrooms along the perimeter walls? I can see no relationship between these features and the use of walls to protect sites from water. This does point to another function or *at least* a secondary meaning.

5.2 Fortifications as military structures

Kesarwani (1984) argues that the Harappan fortifications did not have a military function. His idea is that the answer of the function of the walls should be sought in the gateways of the fortifications and that the fortifications had a social function to perform (Kesarwani 1984, 63). I do not agree with his position that the answers should be sought in the gateways. Gateways are important features of a fortification which could tell something about the function but a fortification consist of more than only a gateway. There are more features (primary and secondary) which should be taken into account to assign a function to it. Kesarwani furthermore, compared Harappan gateways with West Asian ones. The West Asian examples showed elaborate guarded gateways with guardrooms which seemed to indicate better military defense than the ones in the Indus. The suggestion was made that since the Indus designs looked inferior compared to the West Asian ones, the Indus gates have no military function (Kesarwani 1984, 71). I think these comparisons are seriously flawed. Kesarwani compared gateways of temples (Kesarwani 1984, fig 7.7) and palaces (Kesarwani 1984, figures 7.10 & 7.11) in West Asia with gateways of cities in the Indus. This is not a good comparison since individual structures such as palaces and temples could be and probably would be better defended than a whole city. He further shows that in the Near East, settlements were defended by two lines of walls. In the Indus this is not the case which led Kesarwani (1984, 72) to suggest that the inferiority of the Indus fortifications showed again that the function was not military related. First of all, does this means that the walls were not suitable for defensive purposes? Were they not effective? I do not agree because, secondly there is wealth of material of ancient sites and places that have been defended through the use of one wall (e.g. Connah 2000, Keeley *et al.* 2007). Moreover, Kuntasi and Dholavira seem to have two linings of walls, although they seem to be quite a distance apart.

In short Kesarwani's critique is unjustified and outdated. His arguments lack any military knowledge and his comparisons are flawed. This means that the fortifications could very well have a military function which is now going to be explored.

Banawali

Banawali is the only site which has the three primary military features discussed in chapter 3.2. As opposed to the other sites, Banawali is the only site which has a V-sectioned moat. It has been suggested (Elcov 2008, 100) that the moat was a protection against flooding. This is reasonable statement but Elcov overlooks the fact that the moat at Banawali has a V-sectioned shape. The V-sectioned moat is a very labor-intensive job (see 3.2) and the question is therefore why the moat has a V-shape when a simpler shape of the moat could be used for water protection as well. The Romans, well known for their

military campaigns, found V-sectioned moats of 1 meter deep extremely useful, although some sources do recommend digging deeper ditches, none up to 3 meter deep (Keeley 2007 *et al*, 61). In those terms, the moat at Banawali, measuring 3.60 meter would have been extremely efficient and clearly indicating a military defensive mode. However, it is unclear whether the entire settlement was surrounded by the moat since only the eastern side of the moat has been traced for 75 meter (Indian Archaeological Review 1983-84, 27).

The gateway on the outer wall at the eastside is reminiscent of a flanked gate (figure 7) suggesting controlled access to the settlement. Bastions along the eastern side of the acropolis wall suggest defensibility as well. The site shows no evidence of secondary military features. Nevertheless, the moat in front of a fortification wall and the presence of bastions and flanked gate clearly attest to the military character of this site.

Harappa

Harappa has two primary features with a military function: the bastions located at mound AB, and the defended gates. The bastions are located at the corners and seemed to be placed at strategic positions. The entrances and passageway on the west side of the citadel mound are explained as having a ceremonial function by different scholars (Kesarwani 1984; Piggot 1950). However, this does not take away the practical use of a military function in my opinion. The structures had to be protected as well and the guardrooms found nearby suggest protection. Therefore, while the entrance might primarily have been used for religious reasons, the need for protection was present. The research of the Mounds E and ET revealed the presence of walls and gateways. Interesting is the fact that both mounds seem to be walled and that they connect through a gateway. Its thickness and the presence of a bastion suggest that quite a large labor force must have been involved in the construction.

Several secondary features (ramparts, towers and a salient) are present and are only found at mound AB. According to Wheeler (1947, 66) the rampart was meant to be a barrier against flooding. However, in the previous section (5.1) it was shown that flooding did not seem to be a major problem at Harappa. Furthermore the use of platforms hints to flood protection already. Was it then an extra protection for the water or more military related? It is difficult to judge, perhaps the rampart fulfilled both functions. I am inclined to think that, because of the primary and secondary features combined, the fortifications at the citadel mound point to a military function. The mounds E and ET show less military features but here too the platforms should take care of possible flooding. The small piece of wall at Mound F is not enough to make a conclusive statement about it. The thickness of the wall (9 m.) as well as at mound AB (12.2 m.)

suggests that a lot of resources were used in the construction of the fortifications. This then might point to more ideological reasons. The symbolic role fortifications could have played will be further discussed in the following chapter (5.3).

Kalibangan

Kalibangan has bastions and defensive gates as primary military features. The citadel area in the west was well protected by thick walls and bastions placed at the entrances. Entrance A, B & D are flanked gates and entrance C is protected by salients (see figure 20). Bastions, located mostly at the northern part, give the citadel area a militaristic character. Not many secondary features have been found at Kalibangan, apart from the salient at entrance C.

It seems that the citadel area of Kalibangan was much better protected than the lower town. Lal (1981, 49) points to ritual activities that might have been performed in the southern section of the citadel. The citadel suggests to have a military character but the fortification wall at the lower town is not completely excavated to present a conclusive statement for Kalibangan as a whole. The defended gate suggests that protection was an issue though.

Mohenjo-daro

It is difficult to establish the citadel mound as completely fortified due to the fact that no large scale excavations were aimed at such features and only a few trenches were opened. Wheeler (1947) did suggest that a mud-brick periphery existed, since he found traces of a mud-brick periphery (see 4.2). Recent corings also indicate that the other mounds were probably fortified. It is therefore expected that the citadel was completely fortified as well.

As for primary features there is only a defended gate at the southeast side of the mound of the great bath. The presence of two towers flanking a gate can be seen as a defensive military function. However, Kesarwani argued, following Raikes and Dales, that these structures were a "*constructional elaboration*" of the defenses against flooding (Kesarwani 1984, 65). This conclusion seems a bit hasty since there is almost no additional data to confirm or to deny his statement. There are some secondary features that indicate a military function such as the parapet and the presence of towers which might indicate militarism. On the other hand, the presence of the postern is debated.

Interesting is that in the south eastern corner of the Mohenjo-Daro citadel, on the platform with the parapet, the excavators found about a hundred baked-clay missiles (Wheeler 1953, 28). The location where these clay missiles have been found, at the parapet, suggest perhaps a military function. Clay missiles were also found near the

granary structure and a hoard inside a vessel has been found in the lesser of two halls in the southern half of the citadel. Furthermore, south from this area a quite number of large pottery balls have been found which lay scattered around outside a thick enclosure wall (Wheeler 1953, 56). Whether these clay missiles and balls can be considered as weapons remains unanswered. Wheeler (1953, 56) identifies them as weaponry and noted that it seemed likely that they were projected from slings.

Unfortunately, due to the lack of data a conclusive statement is not possible. The site has primary and secondary military characteristics which points to a military function. The problem with this site is that fortifications walls at the mound of the great bath have not been established through excavation. Therefore the aforementioned features are not connected with a fortification system. However, if the same situation exists as at Harappa in the Mature phase (and the latest research shows all the mounds were fortified) then a military function could be a plausible option.

Dholavira

From a military point of view, Dholavira is a well-protected site and has numerous primary and secondary military features. The outer fortification ring has bastions at regular intervals which eliminates dead space. A fair and relevant question is whether the Harappans could defend the whole outer ring in case of an attack. The outer ring seems quite large to be used as protection in case of an attack since it would require a large population. On the other hand, it would also be difficult for attackers to attack the walls at the same time along their length. Moreover, as Arkush and Stanish (2005, 10) argue, long walls were usually defended by watch-posts and lookouts which could use fire and smoke signals to 'ask' for help. This suggests that the outer wall could still be very effective despite its length.

The inner areas, middle town, castle and bailey have very thick walls with bastions as well. The gates at the castle have defensive aspects such as the guardrooms at some of the entrances. The north gate of the castle has two guard rooms and is reminiscent of a flanked gate (see figure 7). The east gate of the castle also has a room in its passageway. Furthermore, the entrance at the lower town of the east side is flanked with bastions, which again belong to the flanked gate category (see figure 7).

Dholavira has primary military features which clearly attest to the military function of it, most remarkable the castle which, in my opinion, has definitely a militaristic function. The thick walls and defended gates suggest that the people or activities inside were important enough to protect. The ramp which protected the castle (figure 16) also attests to defensibility of the castle. In general it can be said that the

fortifications at Dholavira do point towards a military function, but to which extent these structures were used is unknown.

However, the scale and grandness in which the Harappans built the fortification system of Dholavira also hints to showing off. If the fortifications do represent some monumentality it does explain the number of defensive features. The idea of monumental architecture will be discussed in the following section.

Kuntasi

Kuntasi does not have lot of military features. It has one primary and one secondary feature. The primary feature is the entrance on the east which is flanked by a bastion with a possible guardroom. The secondary possible military feature is the tower. The tower in the southwestern corner could be interpreted as a watchtower to be used as military outlook post. However, due to its location to the river and the absence of other military features it probably functioned as a watchtower.

An interesting aspect is the double fortifications walls. They are not as thick compared to other Harappan sites though and the outer wall provided no military features suggesting less or no military significance.

It seems that Kuntasi was not as heavily guarded as other Harappan sites. Kuntasi has a flanked gate and a watchtower so there are militaristic features present but the scarcity of them cannot account for a definite military function of the fortifications. However, Kuntasi is also much smaller than other sites, so the features could still be very effective

Lothal

There is no evidence that the fortifications of Lothal represent a military function. No primary and secondary features were found which could indicate such a function. As argued in chapter 5.1 the suggestion of protection for floods by the walls seems plausible.

Surkotada

The layout of Surkotada portrays a compact, defensive layout in which primary and secondary military features have been uncovered. The entrance, complete with parapet walls, at the south side of the citadel area looks a *bent axis* model (see figure 6) suggestive of a military function. There are some doubts though whether the entrance was built in Late Harappan or belongs to the Mature Phase. The entrance at the residential area seems to be just a gap and has no military significance. Although the bastions were built in Late Harappan, the thick walls and the rampart suggest a military function of the fortification in the Mature phase as well.

Summarized

Taking all the sites together, the fortifications do point to a military function. Among the examined sites, only Lothal has neither primary nor secondary military features. The other sites show that they all have primary military features. Bastions and defended gates were present at those sites and show a military significance. With regards to the secondary features, it can be said that even those features are present at almost every site. However, these features vary a lot from site to site and do not show a uniform picture.

The thickness of the walls also differs from site to site. The thickness might be explained through settlement size. After all, the more people a site had, the more could work on a wall. Perhaps bigger sites were richer and needed more protection as well. The thickness could also point to monumental architecture as a form of wasteful spending to enhance prestige. For example, the thickness of the walls at Harappa, Lothal and the castle at Dholavira suggest that a lot of resources were spent during the construction of these walls. The V-sectioned moat at Banawali too must have taken a lot of manpower to fulfill that task. If structures are built in such a way that seems to exceed its material more than a practical level requires, it could be seen as monumental. Some of the Harappan fortifications could then be viewed as having a symbolic meaning. This will be explored in more detail in the next section.

5.3 Fortifications as monumental architecture

As explained in Chapter 3.3, monumental architecture can be seen as wasteful spending to enhance social prestige and power. Builders of such monuments usually want to keep their power, so they have to invest in activities that sustain this and if possible to expand the society. Investing time and energy in monuments of whatever kind is the easiest way to show authority and is as well a lasting and enduring demonstration of power (Trigger 1990, 126). An obvious question would be whether the fortifications discussed can be considered as monumental architecture and how it can be established. Establishing whether a structure is monumental encompasses a lot data and is outside the scope of this thesis but the thickness of the walls might be an indication. The fortifications as monumentality will not be discussed site by site but in a general way using examples when necessary.

With regards to the fortifications, the thickness of the walls might tell something about their monumentality. The thicker the walls, the more resources were spent. Table 12 summarizes the sites with the thickness of the walls in the last column. The three sites Harappa, Lothal and Dholavira have fortification walls of over 10 meters thick. From a military point of view this far exceeds the functional level. Surely, no slingshot or bow

and arrow could penetrate or tear down such thick walls as at Harappa. Even more, a one or two meter thick wall would be as efficient as a 6 meter thick wall to such weapons. Banawali, Surkotada and Kalibangan have, in comparison, less thick walls. Nevertheless, the thickness of the walls at those sites does suggest some overbuilding. Only Kuntasi has relatively modest walls with regards to the thickness of the walls and the walls do not seem to represent some monumental structure. Unfortunately there is no data concerning the Mohenjo-daro fortifications but I think in general the fortifications, with the exception of Kuntasi, do suggest some kind of monumentality. Even more when the military function of features such as the bastions, salient or tower are not acknowledged, those features do imply that extra resources were needed to construct them. Extra effort was invested in these features what may suggest some kind of monumentality. The possible functions monumental architecture could have will now be examined.

Reinforcing status

In general it can be said that the citadels are better protected (Harappa, Dholavira, Kalibangan, Surkotada). In other words more resources were spent at the citadels suggesting the importance of the citadels. The citadels are often connected with the homes of leaders or priests (e.g. Lal 1984, 61; Rao 1973, 62). Perhaps the fortifications at the citadel are to impress people of the lower town and at the same time reinforce their lower status by not spending as much as in the citadel area. However, if this is the case, why fortify the lower town? Although, the lower town is less protected and does point to inferiority it does seem strange. One also has to take into account the size of the lower town which is usually bigger and thus more bricks and manpower was needed. For such statements, calculations have to made so for now, no conclusive statements can be given.

Interesting is that, Bunimovitz (1992, 228) argues that the reason for erecting such monument is linked with competition. An important aspect of the interrelationships between is the desire to achieve higher inter-polity status by ever greater displays of wealth and power. This means that a bigger monument will receive more status and respect. Bunimovitz then explains the constructions as "an *outcome of competitive emulation between neighboring tribal groups".* In this context, the site Dholavira has to be mentioned. The immensity and complexity of the fortifications at Dholavira have no other parallels at other Harappan sites. The site Dholavira has 14 city gates, numerous bastions, and the castle with its very thick walls all divided in three fortified sectors. Furthermore there is the castle with walls of 11 meter wide and 16 meter high and four impressive gates. It appears that the east gate of the castle had symmetrically arranged, neatly cut and beautifully carved and polished limestone blocks and polished pillar bases incorporated in the design (Bisht 98-99, 30). Taken all the features of the fortification

system of Dholavira in account it seems that these features far exceeded the military function from what was required and that there was a high investment in labor and materials. The construction of walls, bastions, gates and a massive rampart seems to hint to the display of wealth and power and probably had a more ideological than a utilitarian function. Whether these were used to reinforce status remains the question but the site Dholavira shows that it could very well be connected with status.

Intimidation

Enormous construction works could function to scare off potential thieves, robbers or other enemies (Trigger 1990, 125). It is difficult to judge whether such structures were meant to impress the people of the lower town or to have a more deterring function. Concerning the latter, one has to ask the question if there was anything valuable to be protected. In this context, the presence of a surplus might point to this. First a surplus is necessary for large scale construction as is indicated by Abrams (1989, 58), who stated that the increased expenditure in public architecture is in essence caused by the growing surplus. Secondly, it meant that this surplus had to be stored and had to be protected. The question of surplus in this context is therefore an important one and the question is justified if the people of the Indus did employ such as system. While the function of these so-called granaries is debated, Ratnagar (1991) has shown that such a function would be the case at one site at least. Granary structures are found in the Indus and three structures can be considered as having the function of storing surplus. These are all built on elevated ground and one was found in Harappa, one in Mohenjo-daro and one in Lothal (Ratnagar 1991, 123-124).

Surplus also meant social organization and norms of possession. It would also mean acquiring rights over more surplus and perhaps taxation (Mann 1986, 65). In chapter 2.3 it was described that the Harappan society was a resourceful society and the environment of the Indus valley provided all the needs in terms of subsistence for the people of Harappa society. In this context, the walls could be seen as a mode of protection for the surplus and perhaps perform a deterring function.

Victory monument

Clarke and Martinsson-Wallin (2007) link monumental architecture with variation in environmental productivity and resource diversity together with population growth. Highly productive environments can support a large population which can be diverted to construction work of monumental proportions. The origin of monumentality is linked with the need of the expanded population to express territorial ownership. What is interesting is that in this evolutionary ecology model, when the distribution of food

resources is relatively stable and predictable, intergroup aggression is more like to occur. After all, taking away food resources form neighboring parties is cheaper that increasing one own production. Monumental architecture in this example can thus symbolize the dominance of one area over another (Clarke & Martinsson-Wallin 2007, 32). In this way a monument could be seen as both a victory monumental as well as an intimidating structure.

The location of Harappan sites close to the Indus and its tributaries might have attracted surrounding settlements for food resources. That fortifications were needed to protect resources (surplus) seems an interesting idea. If fortifications could be seen as a victory monument and meant that it could also be used to demarcate territory than aggression over food resources seems plausible. Abrams (1989, 62) suggests that monumental architecture was a strategy used in times of political and economic stress and was the consequence of enhancing group identity. What kind of stress is not explained but a quarrel over food resources or perhaps a turbulent transition into another period another might be a possibility. The period in which monumental architecture was erected could therefore tell more which will be done in section 5.4.

The materialization of ideology

The aforementioned ideas all reflect a symbolic meaning as a result of particular processes. The ideas might best be summarized in the concept of DeMarrais *et al* (1996). They claim that monumental structures were the result of an ideology which has a material and a symbolic content. They are given physical form to transmit information and meaning. This process is called *materialization of ideology* and is used to become an effective source of power. Materialization makes it possible to communicate the power of an authority to a broader population (DeMarrais *et al.* 1996, 16).

Whether the symbolic function of the fortifications was to symbolize dominance, to gain status and respect or a subtle message to reinforce the power of rulers is difficult to ascertain. The ideas are all linked with ideology, therefore the fortifications could be seen as materialization of ideology in the first place. The link between ideology and architecture has been briefly described in Chapter 2. Miller (1984, 60-63) saw a link between ideology and the layout of the sites and Possehl (2002b, 56-58) proposed that the preference for building structures relating with water had ideological connotations. These are merely ideas and by no means accepted as facts but they do offer an interesting perspective. Namely that architecture and ideology are closely related in the Indus valley. It is definitely not a farfetched idea that the fortifications do have an ideological meaning as well.

I think it is interesting that Clarke and Martinsson-Wallin (2007) and Bunimovitz (1992) both state that monumental architecture was the result of aggression or some kind of conflict. Together with the idea of Trigger that the nature of the structure could tell something about its circumstances, I think that the fortifications could very well have a military function. At the same time, there are indications for the fortifications having a symbolic meaning. The fortifications at some sites could have had deterring function or transmit a sense of power. Therefore, I think it is simplistic to threat all fortifications as having the same function. To assign a single function to the fortifications and project that label to other sites makes no sense and the possibility of the fortifications have multiple function should be left open. This will be discussed in section 5.5, now the fortifications will be explained in terms of the three variables location, site size and structural history.

5.4 Fortification patterns

However, military and ideological functions cannot be assigned to fortifications alone without looking at the society in which they are placed. What happened in the Mature phase in Harappan society and are there patterns of the fortifications which can tell more about this? The fortifications and their features are therefore arranged according to three variables; location, site size and structural history which are presented in tables and can be found in appendix III.

Location

In table IX (appendix III) the examined sites are divided into their geographical location. The table presents a varied picture and on the basis of the 8 sites there does not seem to be big pattern. Parapets and towers are not represented in the northern sites. The salient does seem to be a northern ‘style’ but the variation is still too high for this small sample that no hard statements can be given. However, it is interesting to note that the three regions (north, west, south) all have a large site. These larger sites could represent a core site within a region and perhaps site size could tell more.

Site size (settlement function/ hierarchy)

Table 11 (page 51) shows that primary features are not varied and can be found almost at every site (with the exception of Lothal). It is therefore of no use to arrange the primary features to site size. The secondary features table (see table 12 page 53) offer a more varied picture. Table X in appendix III shows the secondary features arranges to site size and it seems that the three largest sites (Mohenjo-daro, Harappa and Dholavira) all have two or more secondary features and thicker walls compared with the smaller sites. The

larger sites could perhaps represent the seat of authority in their region or they could be places where wealth was stored. Both explanations require good protection and one could expect more protection at such sites.

Kenoyer (1995, 221) sketches a picture in which the larger cites were directly connected with external regions and to each other by inter-regional networks. The towns and cites were connected through intra-regional networks in which locally produced items and essential commodities were redistributed through local exchange systems. It seems that the larger sites had a function connected with trade. Trading was intimately with warfare and killing and robbing trade partners was not uncommon. Keeley (1996, 123) notes that certain type of exchange systems involved forms of reciprocity. This meant the mutual giving of 'gifts' in which a gift with similar value would be expected in return. Failure in this regard, could lead the aggrieved party towards more violence the next time and, in the case of valuable gifts, could even lead to war.

With regards to the Indus valley, Kenoyer (1995, 221) constructs three trade/exchange systems. The first one is based on a standardized weight system which could reflect a centralized authority. The second one is regional and involves exchange for grain for other commodities, perhaps using generalized measures in basket or pottery vessels and the third possible way is the exchange of goods for services. Kenoyer (1995, 221-222) furthermore adds, that different sources were utilized which must have presented an opportunity for competition between merchants and suppliers. On the other hand a problem for elites who were trying to control access to these potentially high status materials.

The larger sites show more secondary features than the smaller ones which could be expected since these sites could have had more wealth stored in their cities due to their trading activities. The trade activities and the concomitant possible conflict suggest a military function of the fortifications for larger sites.

Construction development through time

The Mature Harappan phase represents a long period of approximately 700 years (not at every site though). A comparison between the different fortifications would be seriously flawed since it is such long period. Therefore graph I in appendix III shows the structural history of sites related to the fortifications which could tell if there is a specific timeframe in which the fortifications were built. However, some sites have no absolute chronology which makes the comparison flawed. However, additional information from the excavators could solve this problem mostly.

The fortifications of Banawali could well be constructed at the start of the Mature phase since the site was completely rebuilt from its previous phase. However, they can

also be later additions during the whole Mature phase making it difficult to determine a precise timeframe for Banawali. For Harappa it can be said that the mounds E + ET have better chronologies than mound AB and the construction of walls is placed between 2600 – 2450 BC (see table 2 appendix III). I think it is reasonable to suggest that the important citadel mound was not later fortified than mound E and ET and that it is safe to assume that the fortifications at mound AB started at the beginning of the Mature phase between 2600 -2500 BC. Although no specific time frames are given, in chapter 4.3 it could be read that the adoption of a new set of fortification in Kalibangan took place at the beginning of the mature phase. For Mohenjo-daro goes that it probably was a founder's city built in a very short time (Elcov 2008, 132). This suggests that the structures were built at the start of the Mature phase. The construction of fortifications in Dholavira and Lothal began slightly later than the four sites mentioned above but can be safely assigned to the first period of the Mature phase. Kuntasi and Surkotada present a different picture. Kuntasi was established later during the Mature phase, its mature phase starting around 2400 BC and its major military construction can be attributed to a later period in the Mature phase. For Surkotada goes the same, its mature phase start relatively later and construction relating to militarism seems to be heading towards the end of the Mature phase.

For five sites then, it can be safely said that the fortifications were constructed at the beginnings of the Mature phase. For Banawali this is not certainty. Kuntasi and Surkotada do not have a Pre-Harappan phase and are established during the Mature phase and could be very well colonies of the Harappans. If Kuntasi and Surkotada are left out of the sample, because of those reasons, there seems to be a tendency that structures related to militarism were built at the beginning of the Mature phase.

The transition from Early Harappa to Mature Harappa seemed to be quite a rapid expansion. Possehl (1990) thinks this period to have been three or four generations (150 years) and speaks of a revolution in the urbanization process (Possehl 1990, 261-262). Shaffer and Lichtenstein suggest that the process took even less, from 2.600 to 2.500 BC, and took about 100 years. Without going into detail about its organizational complexity they add that "*it was a cultural system promoting rapid territorial expansion*" (Shaffer & Lichtenstein 1989, 123). The construction of the fortifications took place in this stage and were rapidly built.

It is interesting to note in this context the destruction levels at various sites at the end of early Harappan. Kot Diji shows signs of massive burning which seemed to have destroyed the entire settlement (Khan 1965, 37). The site Amri ended with "signs of significant amount of burning". The end of the pre-mature phases at Gumla is witnessed by an ash layer. The transitional stage of Nausharo showed layers with extensive burning.

Radiocarbon dates taken at Balakot indicate a gap of several centuries between the Mature Harappan and it preceding phase suggesting some kind of disruption. Kalibangan shows also a hiatus between early and mature Harappan. The catastrophe is however explained as a possible earthquake (Possehl 2002b, 47-48). Although these examples do not have a direct relationship with the examined sites (only Kalibangan), they do indicate that there were signs of disruption in Harappa and that the beginnings of the Mature phase may not always have been free of conflict.

Furthermore, if the fortifications can be considered as monumental architecture or have any symbolic value attached to them, why is this expressed in military features? No temples and palaces have been found in sites in the Indus valley that could be monumental. As already noted, the need to express power is greater in formative stages of early civilizations. It is possible that if certain types of buildings predominate at one time it could tell something about the social processes at work. An emphasis on temples serves the needs of the upper class. In later stages, the increasing sizes of palaces reflect a centralization of power in the hands of kings (Trigger 1990, 127-128). Might it be deduced from this, that the beginnings of the mature phase of the Indus Valley had a more military character? And therefore monumental architecture was expressed in military forms e.g. massive walls with bastions?

It is interesting that Mann (1986, 28) notes that one source of power would eventually be adapted as the primary reorganizing form when the state more or less functioned. So, the beginning of the urban Mature phase, in terms of power, was ideological, economical and in my opinion it could have seen violence and have been military but as it seems now, ideology could be adapted as the main strategy for power on the long term. This is suggested by the importance scholars ascribe to the role ideology played in Harappan society (see Chapter 2).

Although, the data suggest that the fortifications were mainly at the start of the Mature phase, it does not mean that the fortifications were not used or were not effective during the entire Mature phase. There is also not much known about potential enemies (if any) of Harappan people. The fortifications could be still very effective during the whole Mature phase and might be defensible in their social context. If one expects war parties to be small bands with less impressive weaponry than the fortifications could very well be effective. Fortifications are built according to their perceived threat, meaning if potential enemies did not come up with a new technology then no new investments would be made to improve the fortifications (Arkush & Stanish 2005, 7). This would mean that the fortification could be used during a long time and not only necessarily be linked with one specific period.

5.5 Discussion

That sites in the Indus valley could have had some trouble with flooding is not an issue in my opinion. It was a reason for choosing their settlements close to the river to practice agriculture. But in how far would it pose a real threat to the inhabitants of the site? The only site that shows this would be the case is Lothal. Only Lothal has various rebuilding phases due to flooding which shows that the river was unpredictable and that a mode of protection was needed. Furthermore, the walls at Lothal do not include bastions or towers which are features of military defense indicating that the interpretation of the Lothal walls as flood barriers is plausible. On the other hand, there is little evidence that walls at other sites had the same function as at Lothal or that they were subject to extensive flooding. Moreover, the walls at the other sites have primary military features such as bastions and gates which point to a militaristic function of the fortifications. Furthermore there are secondary military features which strengthen the military function of the fortifications. However, not all the sites seem to represent a uniform picture as can be seen from the thickness of the walls and the variation in secondary features (see table 12 page 52). In general though, the presence of primary and secondary features hints to a military function.

It is argued that the fortifications could also have a symbolic function. According to Keeley *et al* (2007) the symbolism of fortifications is predicated on their military function. They state that "*fortifications are most symbolically useful when they are militarily functional*" (Keeley *et al.* 2007, 81). They further criticize the idea that fortifications having enclosed a ritual structure, administrative activity or domestic homes often are claimed to be symbolical. Fortifications often surrounds areas with multiple functions and since they are useful as symbolic structures, their meanings would have undercut military ones (Keeley *et al.* 2007, 81). The symbolism would therefore be secondary to its primary military function. This is acknowledged by Arkush and Stanish (2005, 11), who state that scholars should expect ritual uses of defensive sites since religious activity is a universal aspect of human life. A fort is only a fraction of its time used for fighting (or defending). Therefore nonmilitary activities along with their objects are common things in a fortified settlement, including ritual activities. (See the southern section of the citadel at Kalibangan for example).

Whether the fortifications are monumental or not, it remains difficult and simplistic to assign one specific reason for the existence of fortifications. In fact, as Parkinson and Duffy (2007) put it "*the main interpretive conclusion to be drawn from the last 20 years of archaeological research on enclosures and fortifications is that there is none*" (Parkinson and Duffy 2007, 112). It seems therefore that the possibility of fortifications having multiple meanings is not that farfetched.

In Yayno for instance, a fortified centre in north-central highland Peru, fortifications were more than mere defenses. According to Lau (2001) its architecture was overbuilt when it was solely intended to be for defensive functions. Its architecture seemed to communicate the common strength of the site (Lau 2001, 438). Or at Mycenae for instance where, architectures' main function was defensive, a means for protection from the outside of Mycenaean states. At the same time the symbolic aspects of particular buildings were meant to express the dominance of the ruling class. Laffineur (2007) cites a prominent position in the landscape, impressive masonry and the thickness of walls as indications. The fortification wall in Mycenae for example measures 6 meter on average (Laffineur 2007, 117). Lau (2010, 438-439) informs us that in many Old World fortified centers a similar situation existed where a strongly defended centre meant a prosperous community. The hillforts, castle communities and citadels were at the same time also expressions of the sovereignty of local leadership.

While I am aware of great sociopolitical and cultural differences with these examples in time and space, it does show that walls in all its forms could have and often would have multiple meanings. It therefore seems that some of the fortifications of the Indus are both militaristic and in some instances would have a symbolic role attached to it. What this means for the Harappan society will now be briefly discussed.

Chapter 6: Warfare in Harappan society?

The fortifications can be categorized as being part of the study of warfare. The study of war and violence is a relative newcomer in the study of archaeology and made an appearance in the mid-1990s (See Vandkilde 2003, Gilchrist 2003). Vandkilde (2003, 127) sees the myths, politics and wars of contemporary society as main causes for the interest in war studies while Gilchrist (2003, 1) attributes a major catalyst to Keeley (2006) whose critical work *War before civilization* is regarded as highly influential.

With regard to this thesis, it is important to note that our modern perceptions of war have usually nothing to do with primitive warfare. Primitive warfare occurred in a variety of forms such as raiding, feuding, ambushing, battling or ritual war. The causes for warfare are numerous and have varied from population pressure, resource unpredictability, territorial needs, labour, revenge, trade, power or personal prestige. The consequences are diverse as well and include population redistribution, resource depletion, political integration or fragmentation (Nielsen and Walker 2009, 2).

According to Keeley (1996, 28), cross-cultural research on warfare shows that the overwhelming majority of known societies had been involved in warfare. There are not so many peaceful groups, the ones that are "*live in areas with extremely low population densities, isolated by distance and hard country from other groups"* (Keeley 1996, 28). Fabbro (1978, 80), who has studied has studied peaceful societies reaches the same conclusion and notes that peaceful societies are most of the time small, local and face to face communities.

Dentan (2002, 278) has another view and contends that peace is as normal as war and notes that scholars should look at the conditions which facilitate war and peace which are mere responses to external stresses. Sponsel (2000, 838) agrees and states that nonviolence and peace are not rare but are rarely studied. Nevertheless, Maschner and Reedy-Maschner (1998, 19) argue that anthropological studies indicate that warfare and violence was attested in every society during at least one period in their history.

Van der Dennen (1995, 536-537) is clearer on the issue and notes that peacability is not a disability. Warlike people can be peaceful and pacifist can also be warlike, it is all about the circumstances. It is not a distinction which is fixed and the two are merely just two extremes of a whole array of survival strategies. Moreover, as van der Dennen (1995, 513) suggests, to apply a dichotomy of war versus peace makes no sense.

In general it can be said that it is illogical to describe a culture as warlike or peaceful. There could be circumstances which favoured the one or the other. The fortifications could have been meant to serve as defense at one point during their lifetime but could be used for other purposes during another period. However, the fortifications could still be effective for their use also when there is no conflict.

Interesting in this context is the concept of 'state of war'. Van der Dennen (1995, 94) notes that a 'state of war' does not necessarily means fighting and bloodshed but can also refer to the readiness to engage in war suggesting that there is a difference between attack and defense. Deterring is a form of defense and may be the most effective means to control violence. It sounds like a paradox, but to avoid victimization and violence and to deter attack is by being prepared to fight. A pre-emptive attack in such cases might be very useful. Showing that you are prepared to use violence enhances you own credibility and deters potential opponents (Van der Dennen 1995, 500- 501). As suggested in Chapter 5.3, intimidation could be a function of the fortifications. Fortifications are immobile, defensive structures that cannot be used for attack. Therefore fortifications alone cannot indicate whether warfare was actively used was as a mode of attack. Other material evidence such as weaponry and skeletal evidence could be examined to look into the 'attack mode' of warfare.

However, such approaches are outdated and Nielsen and Walker (2009, 4) hint to a practice approach to the study of warfare, in which practice can be defined as "*culturally informed and historically contextualized action*" (Nielsen and Walker 2009, 4). This seems to be good approach since I agree that warfare cannot be properly understood without specific understanding of past believes, notions of the landscapes or ideas about *the* other. Nevertheless, weaponry or other material evidence should be the point of departure and its social context could complete the picture.

This brief section shows that warfare in its various forms is present in most cultures during a period and is not be underestimated. Keeley (1996, 126) acknowledges the inferior status of warfare and accuses archaeologists that they immediately plot trade networks if they find exotic goods while it doesn't occur to them if it was booty or not. If the Harappan society actively participated in warfare cannot be determined, but it is argued in this thesis that the fortifications in general have a military function (among others). Other aspects of material could be reviewed in light of these statements. The next section therefore, shows two aspects which are important to understand Harappan warfare. The first is about the 'fig' seal which shows that the social context is important to understand and the second aspect is the weaponry; a neglected issue in the Indus.

The 'fig' seal

There are no narrative scenes indicating warfare. There are scenes that show 'priests' or 'leaders' engaging in ritual offerings or battles with animals but warfare or victory seals have not been found. This does not necessarily mean that there was no warfare. Battles and confrontations may have been illustrated in other ways like dramatic enactments or puppet shows to show the greatness of a leader. Interesting enough, puppets and

terracotta masks have been found including mythological figures as well as totemic animals that are also found on the seals suggesting perhaps a connection between the religious and political sphere (Kenoyer 1998, 82-83).

One narrative seal has to be mentioned though. It is the ‘fig deity seal’ (see figure 26). It has an anthropomorphic figure knelt in front of a fig tree, his hands making a worship sign suggesting reverence while another figure stands inside the fig tree. The two figures wear a horned crown which in the near east meant divinity. King and queens were represented by similar crowns.



Figure 26: ‘Fig Deity’ seal, Mohenjo-daro (http://www.harappa.com/indus/34.html).

Hindu, Jainu and Buddhist texts mention the worship of spirits in fig trees who often were represented as having a human form. The worship of spirits was usually performed through offerings, including bloody ones. To the left of the worshippers stands a throne or sacrificial altar with a human head placed on it. The hair is bound into a ‘double-bun’ which makes Parpola to think, through comparison with other seals, that the head belonged to a warrior. For Parpola it is a sacrificial seal with the worshipper likely being royal and the sacrifice being a warrior (Parpola 1992, 227-230).

Whether this was intended for mythological purposes only or really occurred is difficult to determine on the basis of one seal. It does suggest that the Harappans were familiar with warriors. In this context, it is interesting to note that in Mohenjo-daro, in the northern section of area G (lower town) an unusual deposition of human and some animal remains was discovered. The remains consisted of 20 complete human skulls, some other human and animals bones and offering dishes. Harappan pottery from the Indus period

was found mixed with these finds and can thus be assigned to the mature period (Vats 1940, 197-200). I am not suggesting that these were the heads of sacrificial warrior victims (the skulls belonged to men and women), but the skulls point to a violence related death and maybe even sacrificial.

Although it may seem that the possible sacrifice of people have nothing to with war, it is interesting to note that one of the motives for (primitive) warfare may also be of religious or magical purposes. Spirits or Gods have to be pleased in order to 'fulfill' the wishes of the servants. Whether this meant a good harvest or other beneficial acts, a (human) sacrifice will usually be 'accepted' (Van der Dennen 1995, 416). For that to achieve, wars were waged and the captive, prisoners were often used as sacrifice. Interesting is that some degree of civilization had to be reached before these kind of sacrifices took place. There had to be named deities which demanded organized trained priesthoods with complicated rituals (Van der Dennen 1995, 418).

Weaponry

The issue of weaponry is not the main question of this thesis, but with a thesis dealing with fortifications from a military point of view one cannot escape the notion of telling something about weaponry. Throughout the Indus valley weapons are scarce and lack strength as was suggested early on (see chapter 1.2). It was suggested from that point on that the Indus valley did not have a military force and was a peaceful society. (Although Wheeler suggested military aspects which he linked with the Aryan invasion and the subsequent decline of the Harappan civilization). However as Cork (2005, 411-412) notes, these statements are based on flawed comparisons with the Near East and are never really tested.

Cork (2005, 416) argues that the majority of the Mesopotamian weapons are found in burial and votive contexts. These weapons are therefore stronger and appear to have better quality, but they do no reflect social reality. Despite this, the comparison of technological similar weapons between Indus and Mesopotamian shows similar levels of tin alloying (Cork 2005, 418). Ratnagar adds that the quality of the weapons does not need to be superior or of outstanding quality if the people you are using it against did not have superior weapons (Ratnagar 1991, 155). Just seeing the weapons could intimidate them without actually using them as well.

About the scarcity of the weapons it can be said that a distinction between a tool and a weapon would be useful. So one needs to determine, if possible, whether the object is a tool, a weapon or both. Chapman (1999) suggests specific classes of artifacts whose categorizations could be defined on having a multiple function: The tool-weapon and the weapon-tool. The last category includes objects which have primarily a military function

but can also be used for more peaceful functions. A dagger is an example of this since it can be used for cutting other things than human flesh. Besides these two categories there are the artifacts which can solely be used as tools and objects which have no peaceful functions: the tools and the weapons (Chapman 1999, 108). Such a distinction might be useful when making claims about what a real 'defined weapon' is and what is not. Cork (2005, 419) made a comparison between the amounts of weapons at Indus sites and Mesopotamian sites where warfare is attested. He found that, at all settlements researched, defined 'weapons' are rare making the claim that they are less numerous in the Indus Valley invalid.

This brief look into other aspects of warfare shows that the issue of weaponry and the 'fig' seal as well could offer potential valuable information and are equally important to the role of conflict in Harappan society. What this means for future research will be discussed in the conclusion together with evaluation of the research question in this thesis regarding the military aspects of the fortifications.

Chapter 7: Conclusion

This thesis aimed to assess possible functions of Harappan fortifications and in particular to see if the fortifications had a military function. To answer this, primary and secondary features were assigned to determine a possible military function. The fortifications and their features were thereafter arranged according to location, site size and structural history to gain more insight of the sociopolitical processes at work.

Review of methodology

The focus on military aspects has neglected the ideological side of fortifications. Monumental architecture could be better explored by including other data such as decoration, material or construction method. Moreover, formulas exist to calculate labor input that was invested in construction projects (see Abrams 1989, Kolb 1994). In this thesis, monumental architecture was mostly viewed from a theoretical point of view while a practical approach would be fruitful as well. However, some useful ideas have been proposed in relation to the symbolical meaning of the fortification.

Furthermore, during this research, the fortifications of the eight examined sites were divided into three possible patterns: location, site size and structural history. The first subdivision of eight sites over three regions does not tell much about these regions. For example, only one site (Mohenjo-daro) was taken into account for the western region. Obviously this does mean very little and a larger sample would tell more. The other two patterns revealed a more reliable picture although at some sites there is no absolute chronology. The site sample in itself was varied which contributed positively to the research and did not gave a one-sided picture.

Taking into account the shortcomings, the methodology used provided enough data to tell something about the possible function(s) of the Harappan fortifications.

Evaluation of the results

Regarding the function of the walls at the sites mentioned in the text, I would argue that it is difficult to sketch a uniform picture for the whole Indus, which I do not intend to either. There are some variables which affect the possible function of the fortifications. There is the presence of the platforms, the presence of secondary features (which are very varied) and the ‘elaborateness’ of each particular site which could point to other functions (compare Dholavira with Kuntasi). Therefore a single answer of the function of the fortifications cannot be given for the whole Indus valley and I think that every site has to be judged by itself. Nevertheless, some general trends can be noticed. For example, the primary military features are present at almost every site with the exception of Lothal.

This means that seven out of eight sites have definitely military structures which are the bastion and the defended gate. It seems that the Harappans did not use the moat as a defense mechanism because only at Banawali, a moat is attested. The secondary features are present at six out of eight sites. The presence of these structures is quite varied and a definite conclusion is difficult to give. At some sites they may very well have been used as military structures at other sites not. I think in general it can be said that the examined fortifications had a military function with the exception of Lothal where flooding was a serious problem.

In chapter 5.1 it has been shown that mud-brick as a barrier against water is debatable. I think for the long term it probably would not have sufficed but perhaps it was their best option. Overall it can be said that the Harappan fortifications were not used as a flood barrier. The Harappans had settlements close to rivers, but the dangers of the rivers are not attested at every site. If there was a real danger then perhaps the platforms could have performed the function of protection against water. The function of the platforms (let alone presence) is not uniform at every site as well. Furthermore, as stated in this thesis: why built bastions and defensive gates if the walls are purely intended to function as a water barrier? This does not make sense. The building of bastions and gateways took extra time, labor and material. This then, does not necessarily imply a militaristic function but could also point to a monumental function.

Monumental architecture is an interesting option. Extra effort (labor) and materials invested into the construction is a clear sign of this. The very thick walls at some sites might be interpreted as aggrandizement, show off and display of power. Again the data is not homogenous, not all the sites have thick walls. The walls at Kuntasi are comparatively thin compared with the walls of Harappa. The arrangement of the fortifications into site size could possibly account for this difference. The larger sites have more secondary features than the smaller ones which could be related to trading activities. The structural history does suggest that the start of the Mature phase saw the construction of the fortifications. This phase is a formative stage which might be related to conflict indicative for a military function for the fortifications. However, a monumental function should not be ruled out.

According to Keeley *et al* (2007, 57) there is no denial of fortifications having a symbolic purpose, but in the case of military constructions, this symbolism is secondary in purpose. The question now seems to revolve which was first. Were massive walls, in the case of the Indus, built for monumental reasons with additional functional attributes or were the walls built for practical reasons and had an additional monumental value?

In my opinion the military function was a primary function assigned to the walls. The presence of slings at Mohenjo-daro, a V-sectioned moat at Banawali and bastions

and gates at other sites as well suggest a military character thus a practical function. Moreover, it suggests that Harappans did have knowledge of militaristic features. This military knowledge could have been developed as a response to power-related developments during the beginning of the mature phase. The architectural innovations in this phase, including the fortifications, together with the rapid expansion at the start of the Mature Harappa phase indicate high organizing capabilities that possibly point to the effectiveness of an early state. I think with the conclusions reached in this thesis, military as a source of power should not be underestimated.

Summarizing, it is difficult to sketch a general conclusion. Not all the sites were the same in layout and have all the militaristic features. Flooding did occur at some of the sites, but I would argue that floods were not a big problem at most of the Indus sites and I do not think this was the main reason for erecting massive walls. A symbolic function seems a plausible explanation. However, the militaristic features cannot be denied. The presence of these military features is duly attested at every site with the exception of Lothal. That the walls could have multiple functions seems therefore reasonable. I think in general they would have functioned in militaristic way first and thereafter or concomitant in a symbolic way. Since they were erected at the start of the mature phase, which was a complete new phase, I would argue that a military influence during the beginning of the Mature Harappan phase should not be underestimated and possibly even was present in a mild form.

Future research

The question of fortifications was researched in this thesis, in particular the military aspects of the fortifications. Research in this field is still undervalued and scarce. Much more work can be done in this area of research. The aspect of labor relating to the fortifications for example; how long did construction take place? Was it built by local population? Was it built through the use of force or the threat of force? With regards to militaristic issues as well, questions remain unanswered. Did the weaponry that was found really was inadequate? What function did the weapons have that were found at Indus sites? Furthermore, what do the patterns say about future Harappan sites to be excavated? Are large sites expected to have more secondary features and thicker walls compared with smaller Harappan sites? Are the fortifications constructed at the start of the Mature phase? It would be very interesting to expand the data set. Chapter 4.10 shows that there are more sites with fortifications in the Indus. Furthermore, the area of warfare is neglected and largely unexplored in the Indus and I think it deserves a chance to be fully researched together with its social context and the implications it has for the interpretation of the Harappan internal organization.

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Appendix I: Glossary

Glossary

Architecture, military

1) Class of structures uniquely designed for military purposes. The term is usually applied to castle or other permanent fortifications. 2) The design of such structures.

Bail/bailey

Both bail and bailey were used for the outer wall of a castle and for the court it enclosed.

Barbican

A fortifications, such as a tower, guarding the approach to a castle or town, commonly paced at a gate or drawbridge.

Bastion

A projection, often triangular, from the main walls of a fortification, presenting two faces from which defenders could fire on enemies attacking the main wall or adjacent bastions.

Battering ram

A device in various forms which was driven with force against a wall or other obstacle in order to break through.

Circumvallation

A wall, trench, or other barrier erected during siege operations to protect the besieging forces from the interference of relief forces; thus the barrier faced outward, away from the place or area besieged, in contradiction to a barrier of contravallation.

Curtain

The portion of a rampart, or parapet, or wall between two bastion or gates.

Dead space

An area within the maximum range of weapon, radar, or observer that cannot be covered with fire or observed from a particular position, usually because of the intervention of a barrier to fire or observation (as a hill mass), or the technical characteristics (usually ballistic) of a weapon.

Defense

1) Resistance to attack; the opposite of offence. 2) Structures, tactics, or manoeuvres whose purpose is to protect against attack. 3) Barring the way to the enemy or breaking his attack.

Foss (fosse)

A moat or ditch, particularly a moat around a fort.

Garrison

All units assigned to be a base or area for defense, development, operation, and maintenance of facilities. 2) A military post.

Parapet

A defensive work of earth and stone.[3]

Postern

In a fort or a castle, a back or side entrance door or gate, where entrance could be inconspicuous, including that of defenders mounting a surprise attack on a fortification's besiegers.

Rampart

A wall or earthen embankment comprising the main defensive work of a permanent or field fortification. A rampart is usually surmounted by a parapet.

Revetment

Reinforcement of an earthen wall with hard material.

Salient

A part of a fortifications that projects outward toward enemy territory.[4]

Scarp

The side of a ditch or moat that is next to the wall.

Watchtower

A tower from which a guard or lookout can observe any unexpected activity that threatens the security of the force to which he is attached.

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[3] From Italian; para petto, meaning guard the breast (Macaulay 1850, 2).

[4] The military dictionary (1780) notes that there are two kind of angles, the on salient, which are those that present their point outwards, the other re-entering, which have their point inwards (A military dictionary 1780).

Appendix II: Figures

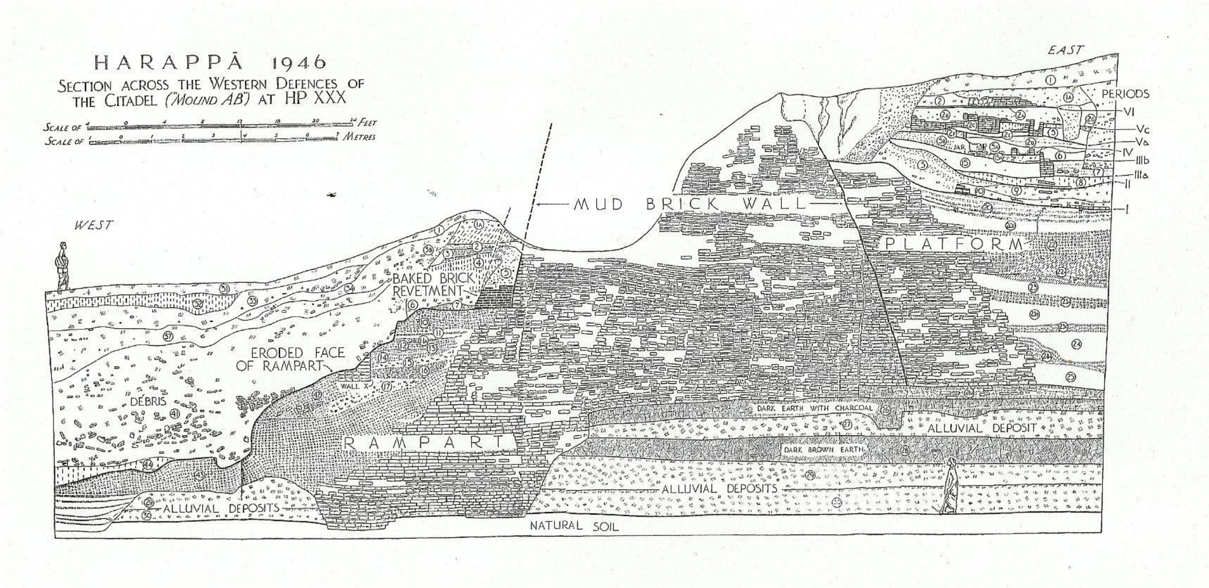


Figure I. Harappa mound AB, section across the defences (after Elcov 2008 p. 113).

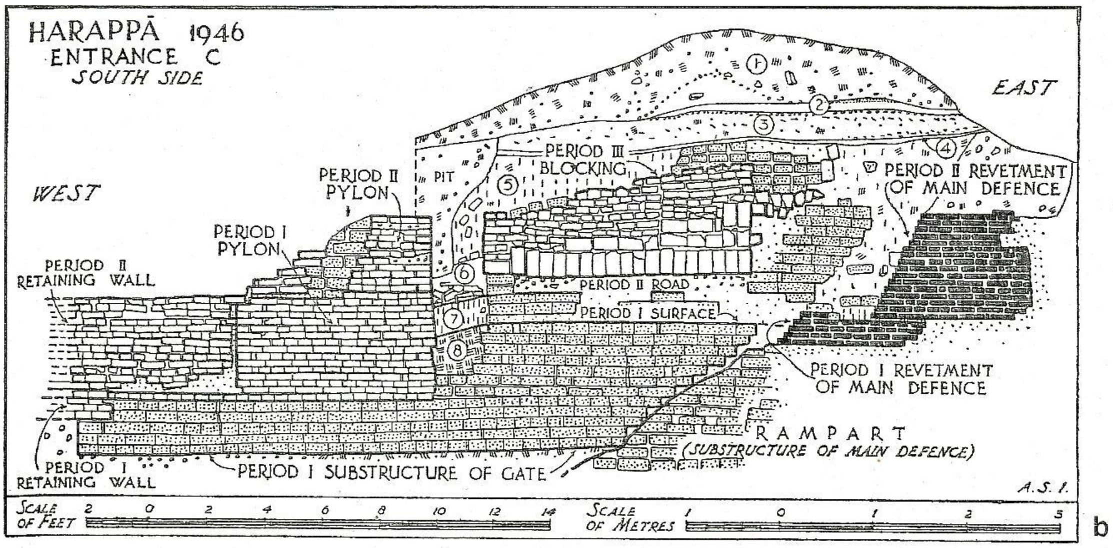


Figure II. Harappa, section of the entrance C (after Elcov 2008, 114).
(entrance 3 in text)

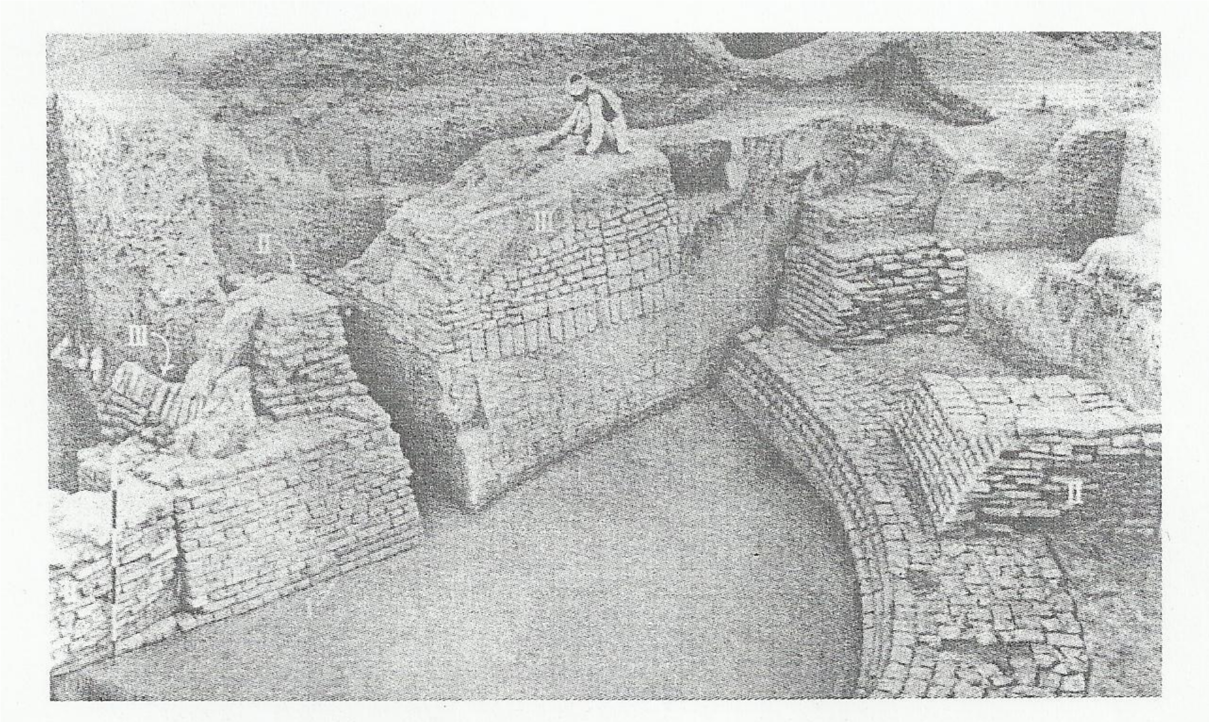


Figure III. Harappa, Gateway C, inner side (after Wheeler 1947, 53).
(entrance 3 in text)

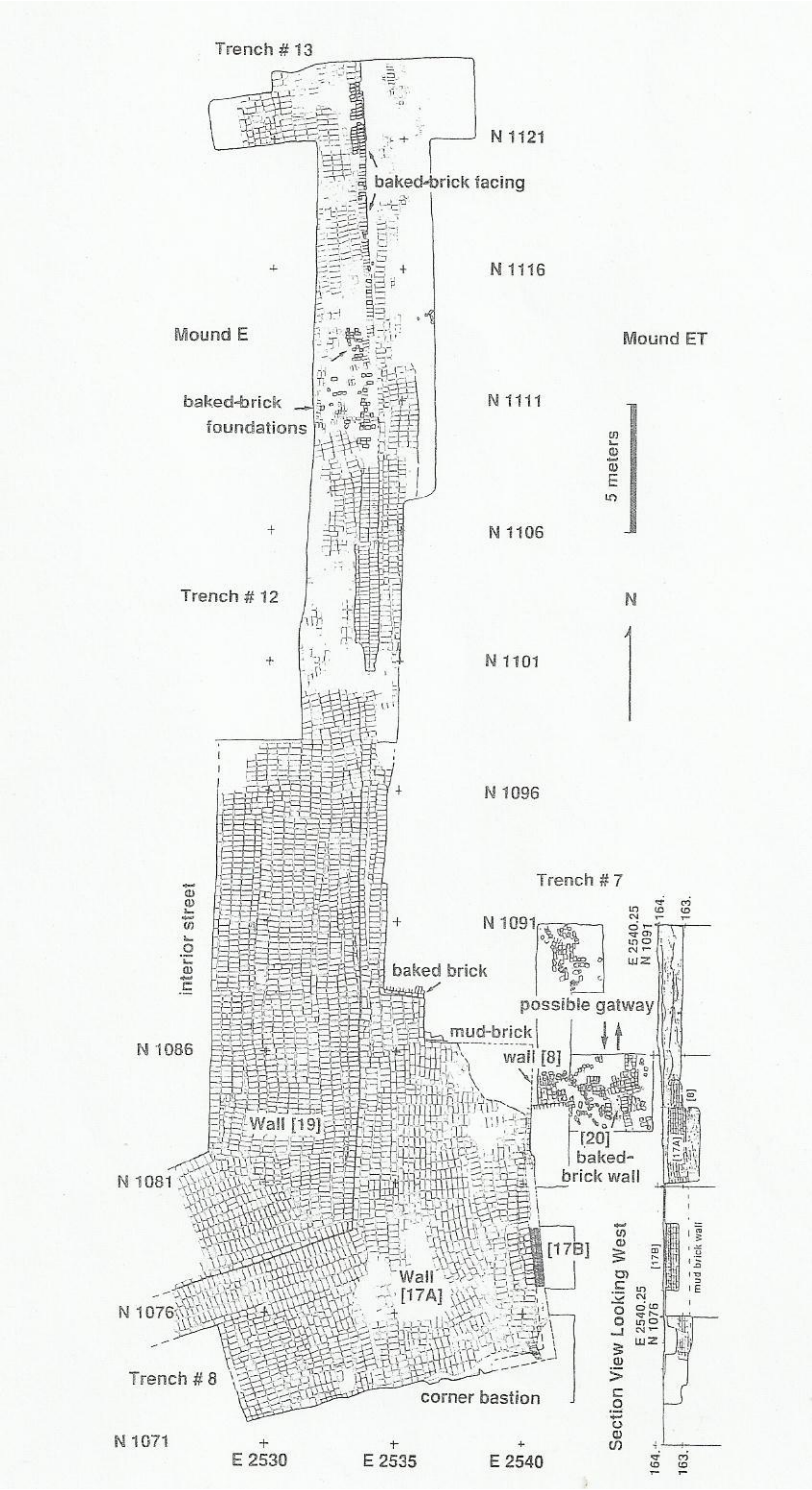


Figure IV. Harappa mound E, southeastern corner bastion (after Meadow and Kenoyer 1997, 456).

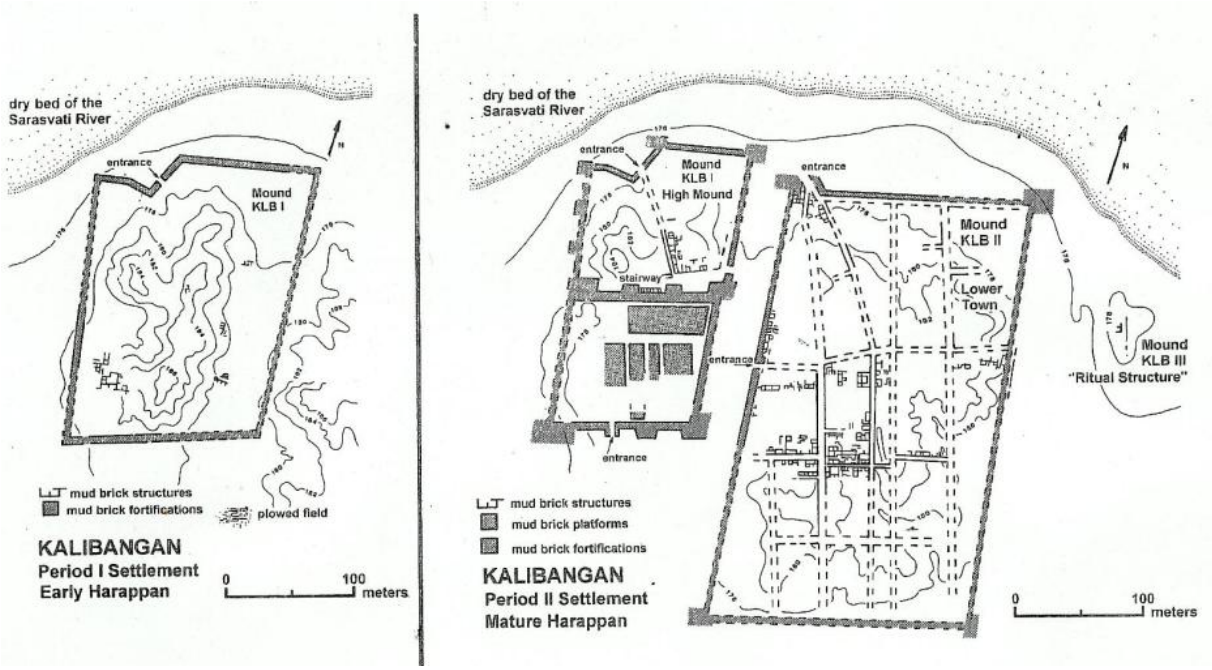


Figure V. Site plan Kalibangan (after Possehl 2002, 16).

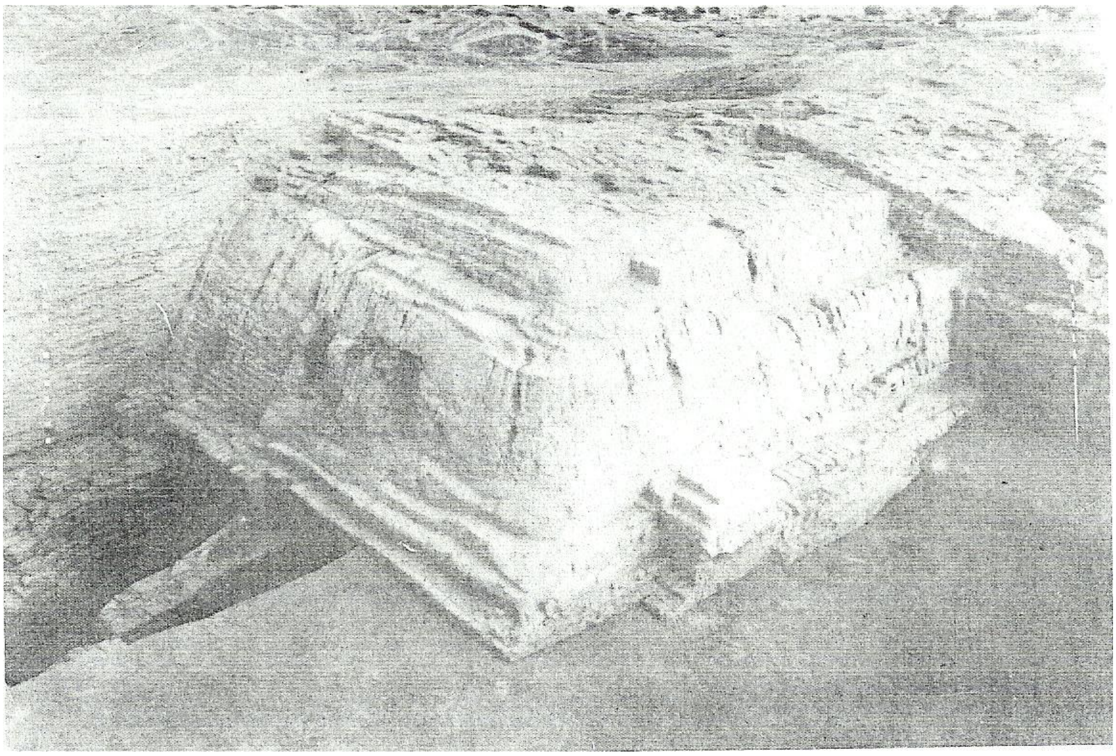


Figure VI. Kalibangan, a mud-brick salient (After Rao 1991 Plate XI).



Figure VII. Dholavira, Reconstruction. Aerial view of Dholavira with the castle in upper left corner.[5]
http://www.taisei.co.jp/kodaitoshi/civil_e/civilization.html

[5] Reconstruction adapted from the "Ancient Civilization City-State Virtual Trip" website by the Taisei Corporation of Japan. Computer graphics: Osamu Ishizawa, Yasuyo Iwata and Nobuyuki Matsuda (Taisei Corporation) in collaboration with NHK.

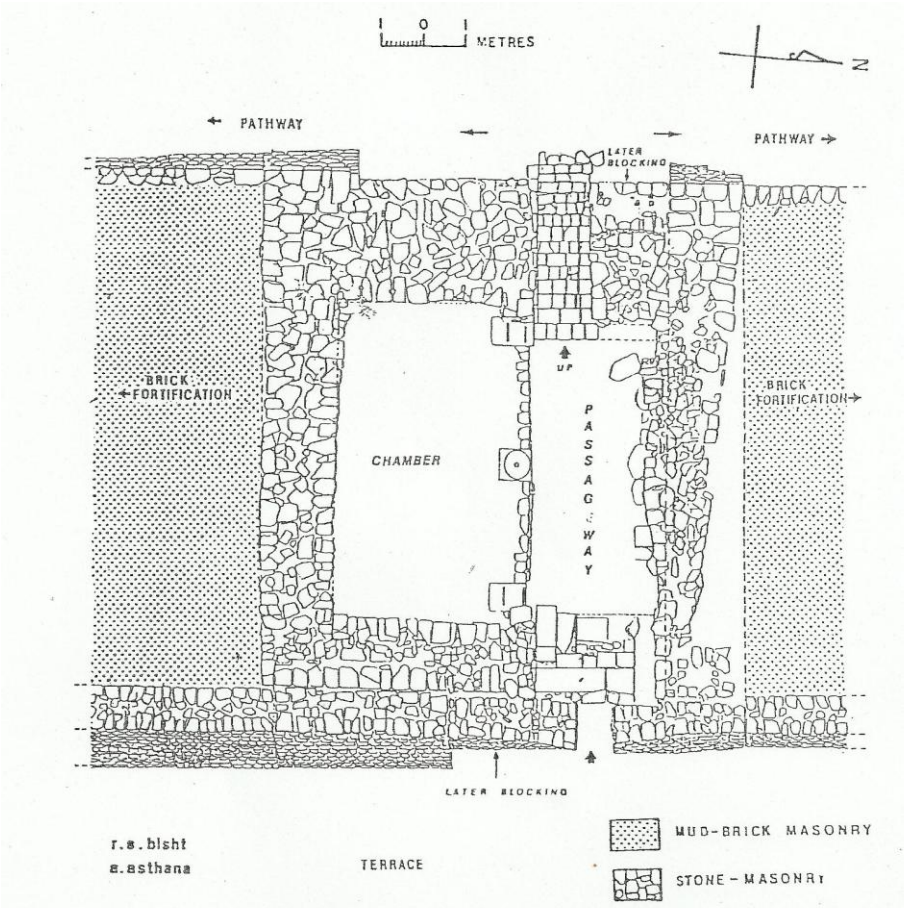


Figure VIII. Dholavira, east gate of castle (after Indian Archaeological Review 1991-92, 34).



Figure IX. Dholavira, General view of the eastern arm of fortification of 'castle' and the east gate.
http://www.asi.nic.in/images/exec_dholavira/pages/011.html



Figure X. Dholavira, north gate of castle.
http://www.asi.nic.in/images/exec_dholavira/pages/007.html



Figure XI. Dholavira, north gate of castle.
http://www.asi.nic.in/images/exec_dholavira/pages/008.html

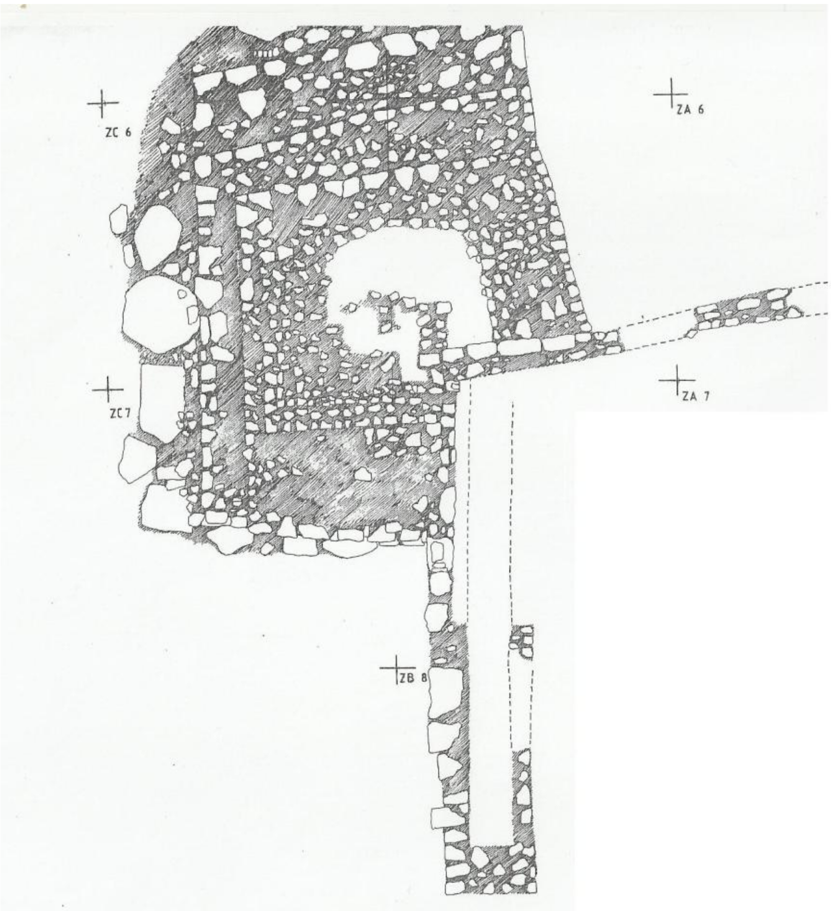


Figure XII. Watchtower at Kuntasi and adjoining fortification wall (after Chitalwala 1996, 53).

Appendix 3: Tables & Graph

Table I. Structural history of Banawali.

Period	Dates	
IB		Construction of wall around the settlement (1.4 m. thick)
IC		Widening of the settlement wall to 2.5 - 3.2 meter
II	2500 - 1800 BC	Construction of bastions, gate complex, V-shaped moat and berm

Table II. Structural history of Harappa.

Period	Dates	Mound AB	Mound E	Mound ET
2	2800 - 2600 BC			
3a	2600 - 2450 BC	Fortifications,	Southern wall, possibly north and gateway	Southern wall (possibly 3b)
3a	2450 - 2200 BC	towers, bastions	Rebuilding walls and constr. of gateway	Rebuilding phase and constr. gateway E, ET
3c	2200 - 1900 BC	and gateways	Repairments	

Table III. Structural history of Kalibangan.

Period	Dates	
1	3000 - 2600 BC	Constr. of ‘simple’ walls around the settlement (2-4 m. thick)
2	2550 - 2000 BC	Creation of citadel with walls of 3-7 m. thick and adoption of new set of fortifications including bastions, salients and defended gates.

Table IV, structural history Dholavira.

Period	Dates	
I	2650 – 2550 BC	Small settlement with fortifications walls at the base of 11.1 m.
II	2550 – 2500 BC	Expansion of the settlement and widening fortification walls of previous phase (2.8 m.)
III	2500 – 2200 BC	- The existing defensive wall was further widened with 4.5 m. - Foundation of middle town with bastions and gateways and corner towers - Construction of outer settlement wall reinforced with bastions and towers - Construction of the Castle with double ramparts and gateways
IV	2200 – 2000 BC	Planning and architecture was maintained with minor alterations
V	2000 – 1900 BC	General decline

Table V. Structural history of Kuntasi.

Period	**Dates**	
1A	2400 - 2200 BC	Small structures (not much data exist for this period)
1B	2200 - 1900 BC	Construction of fortification wall, watchtower and defended gate

Table VI. Structural history of Lothal.

Period	**Dates**	
I	2450 - 2350 BC	Construction of mud-brick wall around the settlement
II	2350 - 2200 BC	Strengthening of perimeter wall and constr. of platforms to raise structures up
III	2200 - 2000 BC	Further raising of the platforms
IV	2000 - 1900 BC	Period of general decadence

Table VII. Structural history of Surkotada.

Period	**Dates**	
1A	2315 - 1940 BC	- Construction of fortified citadel with annexe and rampart - Simple open entrance at the south side of the citadel
1B	1940 - 1790 BC	Defensive gate at the south side of citadel with ramps and parapet (perhaps IC)
1C	1790 - 1660 BC	Construction of bastion at the corners

Table VIII. Sites and their primary and secondary features.

Primary military features				Secondary military features					
Sites/feat.	Bastions	Defended gate(s)	Moat	Parapet(s)	Postern(s)	Rampart(s)	Salient(s)	Tower(s)	Walls, thickness of
Banawali	Yes	Yes	Yes	-	-	-	-	-	Acropolis: 5.40 – 7.40 m. Lower town: 6 m.
Harappa	Yes	Yes	-	-	-	Yes	Yes	Yes	Mound AB: 12.2 m. Mound F: 9 m. Mound E: 5.4 – 6.4 m. Mound ET: 5.5 – 6.5 m.
Kalibangan	Yes	Yes	-	-	-	-	Yes	-	Citadel: 3-7 m. Lower town: 3.5 – 4 m.
Mohenjo-daro	-	Yes	-	Yes	Yes	-	-	Yes	-
Dholavira	Yes	Yes	-	-	-	Yes	-	Yes	Castle: 11.1 m. at the base
Kuntasi	Yes	Yes	-	-	-	-	-	Yes	Inner wall: 1.30 m. Outer wall: 1.10 m.
Lothal	-	-	-	-	-	-	-	-	Settlement: 12.8 m.
Surkotada	Yes	Yes	-	Yes	-	Yes	-	-	Citadel side: 7 m.

Table IX. Sites and their secondary military features arranged to location.

Sites/feat.	**Geographical location**	**Parapet(s)**	**Postern(s)**	**Rampart(s)**	**Salient(s)**	**Tower(s)**	**Walls, thickness of**
Banawali	Northern region	-	-	-	-	-	Acropolis: 5.40 – 7.40 m. Lower town: 6 m.
Harappa	Northern region	-	-	Yes	Yes	Yes	Mound AB: 12.2 m. Mound F: 9 m. Mound E: 5.4 – 6.4 m. Mound ET: 5.5 – 6.5 m.
Kalibangan	Northern region	-	-	-	Yes	-	Citadel: 3-7 m. Lower town: 3.5 – 4 m.
Mohenjo-daro	Western region	Yes	Yes	-	-	Yes	-
Dholavira	Southern region	-	-	Yes	-	Yes	Castle: 11.1 m. at the base
Kuntasi	Southern region	-	-	-	-	Yes	Inner wall: 1.30 m. Outer wall: 1.10 m.
Lothal	Southern region	-	-	-	-	-	Settlement: 12.8 m.
Surkotada	Southern region	Yes	-	Yes	-	-	Citadel side: 7 m.

Table X. Sites and their secondary military features arranged to site size.

Sites/feat.	**Site size**	**Parapet(s)**	**Postern(s)**	**Rampart(s)**	**Salient(s)**	**Tower(s)**	**Walls, thickness of**
Mohenjo-daro	200 ha	Yes	Yes	-	-	Yes	-
Harappa	150 ha	-	-	Yes	Yes	Yes	Mound AB: 12.2 m. Mound F: 9 m. Mound E: 5.4 – 6.4 m. Mound ET: 5.5 – 6.5 m.
Dholavira	100 ha	-	-	Yes	-	Yes	Castle: 11.1 m. at the base
Banawali	15.5 ha	-	-	-	-	-	Acropolis: 5.40 – 7.40 m. Lower town: 6 m.
Kalibangan	13 ha	-	-	-	Yes	-	Citadel: 3-7 m. Lower town: 3.5 – 4 m.
Lothal	5.5 ha	-	-	-	-	-	Settlement: 12.8 m.
Kuntasi	3.3 ha	-	-	-	-	Yes	Inner wall: 1.30 m. Outer wall: 1.10 m.
Surkotada	2 ha	Yes	-	Yes	-	-	Citadel side: 7 m.

Graph I. Chronological overview of site with their (military-related) structural history.

